Vol. XV, No. 2 February, 1923

THE

Journal of Home Economics

EDUCATION FOR PARENTHOOD

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In the summer of 1918, there met in annual convention in Chicago two organizations whose professional interests had long been centered upon the problems of the home. The talk which a member of the International Kindergarten Union gave at the closing session of the American Home Economics Association has led to some developments which are fraught with possibilities of education for parenthood and of the establishment of habit clinics.

A brief synopsis of Dorothy Canfield Fisher's story[1] "What Really Happened" made clear that one may understand and practice the arts of scientific housewifery, of charming wifehood, and loving motherhood quite successfully so long as no special behavior problems present themselves. But let one arise in the form of finding one's only son seated upon a bed cutting and snipping the crisp pink and white organdie curtains, bed spread, and dresser-scarf which are ready for placing in the guest room—soon to be occupied by one's most fashionable and rich, as well as childless, friend,—and the aforementioned arts and graces may not furnish the action patterns underlying the proper management of the wielder of the shears. He was just three years old, wonderfully well cared for physically because the doctor and nurse who had presided over his arrival had made his immediate and changing food, sleep, and fresh air needs clear to the young mother.

The style books and merchants had kept her up-to-date on effective toggery for the youngster. Much of this she fashioned with her own skillful and artistic fingers.

But no one had taught her (or her husband) what a child's behavior might very naturally be in the presence of crisp pink and white cloth and shining shears with no grown-ups about to say "don't." There had been three days of wistful, shy watching of two women who had manipulated the materials in a fascinating way. He would do likewise—so at least it seemed to him.

[1] *Good Housekeeping*, Sept., 1916.

His mother's management of him in this and subsequent situations, when his behavior did not conform to her haphazardly acquired notions of child conduct, may be inferred from Mrs. Fisher's version of her conversation with the eminent specialist who was asked to cure the boy when he was seven years old.

"Was there really nothing that you could do to help that boy?"

"Nothing, unless I might have unlived that boy's life down to the time he was three years old and given him a new mother—or put a pistol to his head."

To readers of mental hygiene, this is no unusual case; some of the superficial features in it are different, but the fundamental factor is the same: gross mismanagement of an individual's absolutely natural behavior in his most impressionable years by the one person who, according to old traditions and popular conceptions, loves him more than any one else in the world could—the woman who bore him!

Strange that the famous alienist did not say "Unlive his life down to his third year and give him a new *father* as well as a new mother" for the boy was not a half orphan. True, the father had a vague suspicion that the boy was not deliberately malicious in destroying the new hangings for the guest room. But he lacked the attitude of mind which grows out of a knowledge that "every event has its adequate history" whether in the life of one's only three year old son or the proudest nation on the earth. In consequence this father drifted along while the misunderstanding by, and estrangement from, the mother increased like the proverbial snowball rolling down a hill. It was expensive drifting: the child, clearly a victim of "double" parental ignorance; the parents, victims of society's failure to enlighten people as to the mental and social-moral problems of developing child nature.

The distinction between child-care with its goal of physical health and wholeness, and child-management with similar objectives for the mental, social-moral aspects of development was readily grasped by the home economics group. The immediate reactions were the closest possible attention to the further illustrations of the need in the home for an understanding of principles of mental hygiene, and to suggestions that the logical and necessary aim in departments of home economics must be provision for its achievement.

So far as the writer knows, Mildred Weigley, formerly chief of the Division of Home Economics at the University of Minnesota, is to be credited with the first experiments based on the suggestion made. She

planned the budget so that in the spring of 1919 funds were available for a series of lectures on child-training for the eighty seniors already prepared in general psychology and in the technical sciences and skills of homemaking and housekeeping. She invited an orphanage to loan two children to the home demonstration houses where these students lived, in order that they might have "laboratory experience" in intelligent care and management of young children. In the fall of 1919 the course was extended to a full three credit course and made a required subject. Lecture and laboratory courses in child training were begun in the N. Y. State College of Agriculture in the spring of 1920. The course has grown to be a popular elective. Its enrollment changed from 14 to 85 students taking it for credit. Auditors—members of the staff and townswomen have been in attendance every year. Oregon, Nebraska, North Dakota, Michigan, Maine, and possibly other states are giving similar courses.

The evidence accumulated thus far indicates that when young women are given an opportunity of choosing such work, they do so. What of the attitude of the young men toward it? After the to-be-expected first skepticism and facetiousness, they accepted the new order of things and showed a wholesome interest in the college babies. To know the points by means of which one evaluates an infant's or child's physical and mental condition involves at least as much and varied, though not identical, knowledge and skill as are required in judging a fine calf, car, or poem. The more general the distribution of knowledge and technique of rearing children wisely, the less misery and waste there will be in society.

The newer knowledges and techniques in the fields underlying physical, mental, and social-moral health have relegated the long-honored human maternal instinct into the realm of other out-grown theories. Instead, there are maternal habit complexes built upon some simple reflexes and many related habits. These complexes have their nature determined by environmental pressures. In the past, these maternal habit complexes have been acquired very accidentally; in the present, they are being acquired by directed work.

To the leading women's magazines of the country and more recently to the more general clinic opportunities, great credit is due for stimulating and directing such acquisition. Some strivings are to be looked for in colleges, if the article on "Parenthood and the College" by Mrs. Eva von Baur Hansl in the January, 1922, issue of the Journal of The American Association of University Women and the deliberations of the Committee

on Educational Policies of that organization can be counted upon as showing a twentieth century understanding of the problems of engineering family life.

Granted that curing the sick, mending the crippled, restoring the depressed and deranged are more dramatic than prevention, they cannot constitute our final objectives. Given a limited amount of funds for research and training work, would not a 50–50 distribution between research for curing, ameliorating, re-educating through psychiatric hospitals or juvenile delinquence organizations, and research and education for prevention in all homes be more effective than the prevailing 90–10 per cent or 95–5 per cent ratios?

"You couldn't get money for it," said the director of an interesting new project for training the maladjusted in answer to the question "Is any organization making a survey of the successful homes in any county to see what principles and techniques operate there to make happy, healthy, worth-while children?" Surely, we are not too optimistic in believing that according to the normal curve of distribution, every county has a few such successful families!

On the whole, students of agriculture concern themselves very largely with fine crops, cattle, chickens, bees, instead of dwarfed and diseased ones; they concern themselves with herds, flocks, and hives rather than one animal of each species. We ought soon to do as well with our home economics students and their laboratory practice with children of normal endowment and capacities for achievement. That is: there should be provided a nursery-kindergarten-school group of children ranging in maturity from cradlers, then creepers, toddlers, run-abouts, to manipulators and coöperators.

At present at Minnesota, our students' experience is extended beyond two borrowed babes to other children through coöperation with existing city organizations. And this brings us to the habit clinic. Without having named it so, we seem to have had one since 1920.

Kindergarten education with its emphasis on child psychology—not psychiatry—was the hand maiden of nutrition in the establishment of "habit clinic" procedure.

The students assist in the preliminary matters of welcoming the parents and children, weighing and measuring the latter. They are present during the pediatrist's handling of the cases. Knowing the diagnosis and prescription, the student visits the home of the case assigned to her at the crucial moments for giving the treatment. She

demonstrates at meal-time how to develop habits of trying new foods or accepting formerly refused ones. She appears at the nap and the bed going hours, if the problem is one of sufficient and well distributed rest. She aids in menu planning if the difficulty lies there. Her procedure is to select one important factor, manage the child properly with reference to it, enthuse the mother to do likewise. She watches, records, and reports developments. She confers also with father to enlist his intelligent support of the new disciplinary measure.

Success by the mother in one situation is extremely important; it gives a confidence born of insight and achievement that is promising for attack of the next problem. Success comes in for special notice at the next monthly meeting of the clinic in the effort to increase the mother's faith in her own ability at better management.

Habit clinicians must bear in mind that frequently other persons than the child must be re-educated. Patience with mal-educated adults is a pre-requisite to improvement in their children. Here, for instance, is a university professor with a doctor's degree who persuades his children, by use of the razor strop, to eat what is served. Here is an M.D. who daily stops his child's crying by a bribe of a nickel. There is an engineer and his wife who kept their son in the basement, illy clad and fed, for months; they thought him too stubborn to acquire proper toilet habits. There is a preacher's wife who tried to teach her son obedience by threatening to drop his baby sister from the third to the first floor. Again it is a business man's wife who allowed her daughter to make and then break a certain promise every school day for six weeks. Now it is a farmer who beats his boys for stealing (?) the musk-rat traps from a neighbor, only to have them borrowed again surreptiously the following Sunday. All of these adults and many others are not necessarily vicious, they are simply uneducated with reference to principles and techniques in rearing children.

Many requests have been made for names of books helpful to parents. The list[2] that follows is representative of the better ones. Because they are sound in principle and unusually rich in concrete pictures of right and wrong ways of doing, they are extremely practical. A list of the more technical discussions of psychology of child-life follows this group.

[2] Prepared by Mrs. Frances L. Warne.

General

Abbott, Ernest H.: On Training of Parents. Houghton, Mifflin Co., Riverside Press, Cambridge.
Fisher, Dorothy Canfield: Mothers and Children. Holt, New York.
Read, Mary L.: The Mothercraft Manual. Little, Brown & Co., Boston.
Willson, Wilhelmina Putnam: The Child who does not Stumble. Capp-Clark Co., Toronto.
Scott, Miriam Finn: How to Know Your Child. Little, Brown & Co.
Harrison, Elizabeth: When Children Err. National Kindergarten College, Chicago.
Harrison, Elizabeth: Misunderstood Children. National Kindergarten College, Chicago.
Palmer, Luella A.: Play Life in the First Eight Years. Ginn & Co., New York.
Hunt, Clara W.: What Shall We Read to Our Children? Houghton, Mifflin Co.
Olcott, Frances Jenkins: The Children's Readings. Houghton, Mifflin Co.
Poulsson, Emilie: Songs of a Little Child's Day. Milton Bradley Co., Springfield, Mass.
Guerber, Helen: You and Your House Wonderful. Uplift Pub. Co.
Beery: New Way in Child-Training, Lesson 1 to 6, Parents' Association, New York City.
Weigle: Training of Children in the Christian Family. Pilgrim Press, Boston.
Cope: Parent and Child. Doran, N. Y. City.

Technical

Bronner: Psychology of Special Abilities and Disabilities. Little, Brown.
Miller: The New Psychology and the Teacher. Seltzer, N. Y. City.
Moll: The Sexual Life of the Child. Macmillan.
Paton: Human Behavior. Scribner.
Tansley: The New Psychology and Its Relation to Life. Dodd-Mead.
Watson: Psychology of a Behaviorist. Lippincott.
Woodworth: Dynamic Psychology. Columbia Univ. Press.
Woodworth: Psychology. A Study of Mental Life. Holt.

Dr. Emmet Holt in the *Delineator*, July, 1922, says "The lower animals are guided by their instincts to give right care to offspring, but the human mother has no such instinct."
Therefore, read these two criticisms of "psychology of instincts."
Faris: Are Instincts Data or Hypotheses? *Am. J. Soc.*, Sept. 1921.
Bernard: Misuse of Instincts in Social Sciences. *Psy. Rev.*, Apr. 1921.

Semi-Technical

Briggs: Manner of the Man that Kills. Harcourt, Brace, Howe.
Blanchard: The Adolescent Girl. Moffatt.
Bradly: Psychoanalysis, Its Place in Life. Hodder, Stoughton.
Hart: Psychology of Insanity. Cambridge Manual.
Healy: Mental Conflicts and Conduct. Little, Brown.
Holt: The Feudian Wish, especially I–IV. Holt.
Low: Psychoanalysis. Harcourt, Brace, Howe.
Robinson: The Mind in the Making. Harper.
Tracy: Psychology of Adolescence. Macmillan.
White: Mental Hygiene of Childhood. Little, Brown.
Evans: The Problem of the Nervous Child. Dodd, Mead & Co.
Tucker: Nervous Children. Badger.

THE DISCOLORATION OF COTTON FABRICS IN LAUNDERING

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Modern methods of textile manufacture have made it possible to obtain snow-white fabrics which have been bleached without appreciable loss of textile strength. This whiteness, however, is not permanent unless very carefully laundered and when once discolored, it can be restored to its original purity only by proper bleaching.

A careful investigation of the literature on bleaching and laundering shows that yellowing of cotton fabrics is attributed to the following causes.

1. Incomplete removal of natural coloring matter adhering to the cellulose of the cotton fiber has been shown to affect the purity of color. According to Hebden (1), bleached cotton retains 0.48 per cent of non-cellulose material, which is composed of protein, fats, and wax. The subsequent yellowing due to these impurities is explained in different ways. Knecht and Hall (2) experimenting with impurities of cotton fiber isolated fatty acids which were white but waxes and resinous material obtained from the lime boil were brown in color.

Higgins (3) reports that waxes change from a light yellow to a brown color when heated. Hebden (1) however, shows that the yellowing is not proportional to the amount of fat and waxes retained but rather to the amount of protein which is therefore more responsible for the yellowing than fats or waxes. Erban (4) and Frieberger (5) are of the same opinion. Most of the nitrogenous matter is removed by the bleaching process which changes it to soluble compounds; but Knecht and Hall (2) found that bleached yarns still contain 5.8 per cent of the original 0.248 per cent of nitrogenous matter. Just how this small amount of impurity, which is colorless immediately after the bleaching process, becomes discolored has not been scientifically established. Recent experiments by Knecht (6) on the effect of dry heat on cellulose and other compounds indicate that natural impurities of cotton are more easily discolored by prolonged action of moderate heat than cellulose itself. That chloramines would be formed by the protein and hypochlorite is a disputed question and would affect the color only indirectly (7) (8) (9). Besides protein, fats, and waxes, raw cotton contains other coloring matter (whose chemical nature has not been definitely determined) which is oxidized in the bleaching process to soluble compounds

which are removed from the fiber and cannot reappear (10). If the bleach has been accomplished by a reducing agent, the color which is apt to reappear may be a reoxidation to the original color, or the result of the action of the bleach on the fiber (11) (12).

2. Changing the composition of cellulose will affect the permanency of the color either by oxidation to oxycellulose or hydrolysis to hydrocellulose. Oxycellulose, formed when the fiber is submitted to the action of the bleach for too long a time or at too great a concentration is much more easily discolored than pure cellulose. The yellowing is especially noticeable when oxycellulose is treated with alkalies (13), sodium carbonate (14), or when steamed. The hydrocellulose, formed by the action of acids on cellulose, becomes brown when exposed to the air (15), or when subjected to heat, although it is not affected by steaming (16). The discoloration of fabrics produced by weathering is attributed by Doree and Dyer (17) to the formation of oxycellulose. Turner (18) has shown that of the three factors—sunlight, air, and moisture—sunlight and oxygen are the chief cause of formation of oxycellulose. However, Vignon (19) suggests the possibility of hydrolysis as well as oxidation in connection with the weathering of fabrics, although Fleming and Thysen (20) found that moisture has no effect if bacterial action is prevented by sterilization or by keeping the moisture content below 9 per cent.

In the manufacturing and laundering of textile fabrics, there is little danger of oxycellulose or hydrocellulose being formed if the reagents are applied scientifically (21). For instance, Heerman and Frederking (22) demonstrated that it is possible to use a calcium hypochlorite bleach which, after fifty applications, results in the formation of only a very slight amount of oxycellulose.

3. Discoloration may also be due to the addition of foreign materials during the process of manufacture, laundering, or actual wear in such a way that the fiber is coated or filled with colored material or material which easily becomes discolored. Such yellowing may come from water, soap, starch, or bluing.

Pure water has no staining effect on cotton cellulose except indirectly by encouraging the growth of moulds; but water which contains iron, if used for laundry purposes, produces a very noticeable yellow stain (23).

Soaps are the cause of discoloration if used in connection with hard water as the insoluble soap formed is difficult to rinse from the fabrics.

Soaps which contain rosin have been shown to leave a yellow color in fabrics (24), and soaps and washing compounds which contain excessive sodium hydroxide cause yellowing even in the absence of oxycellulose (25).

Starch and other sizing materials are less stable than cellulose and are to some extent responsible for discoloration if submitted to the action of heat (26), moisture, or oxidizing agents (27).

Bluing is added for the purpose of neutralizing the yellow of the fabric, producing a gray to which the eye is less sensitive and therefore the material appears nearer white (28). However, some of the common household liquid bluings are solutions of Prussian blue which when heated in an alkaline bath precipitates iron oxide which is very difficult to rinse from the cloth (29).

EXPERIMENTAL

The yellowing of cotton materials in the process of laundering can be traced to all the above mentioned causes but involves most distinctly the second and third; and although the best methods of laundering must take into consideration all the possible causes, the addition of foreign material is of most importance to the home laundress and has been the subject of very little experimental investigation. Therefore the following experiments were performed to determine the relative amount of yellowing resulting from the use of ordinary laundry reagents.

The material used was cambric of a medium grade, (ends per inch 76, picks 70); and a similar grade of muslin, (ends 81, picks 78). The washing was done in a rotating shaking-machine whose speed was regulated so that material would fall forcibly at each revolution. The time of washing was fifteen minutes and each series was washed ten times. Distilled water was used at a temperature between 70°–80° and samples were dried in the shade.

The purpose of the first experiment was to determine the effect of the temperature of the rinse water in relation to certain detergents. Samples of cambric and muslin, nine inches square, were washed in the following solutions, the strength of which was based on general laundry practices (30). Solution I = 1 per cent neutral soap (31). Solution II = 1 per cent neutral soap and 1 per cent sodium carbonate (31). Solution III = 1 per cent naphtha soap (yellow). Solution IV = 0.28 per cent borax (32). Series A - rinsed in cold water. Series B = rinsed in hot water, 60°–65°.

The samples of the cambric, after being washed once, were considerably yellower than those of the muslin, but after several washings the difference became less marked due to increasing color of both. With all the solutions, the best results were obtained when the samples were rinsed in hot water. This was especially true of the samples washed in borax solution, due no doubt to the fact that borax is much more soluble in hot than in cold water and therefore more thoroughly removed from the fiber in the hot rinse. Consequently, hot water was used for rinsing in all subsequent experiments.

The purpose of the second experiment was to determine the effect of boiled starch upon samples washed in the solutions indicated above. Again there was a noticeable yellowing of the cambric. The unstarched pieces were more discolored with sodium carbonate and borax than the starched samples, the starch apparently covering the color produced in the fiber.

The purpose of the third experiment was to determine the effect of ironing with and without starch. Series A—starched but not ironed. Series B—starched and ironed. Series C—ironed but not starched, except for original sizing.

In order to tabulate results, samples were graded in four lots as to desirability of color, letting 1 represent the best and 4 the poorest color.

		SERIES A—STARCHED	SERIES B—STARCHED AND IRONED	SERIES C—IRONED
Solution I	Muslin	1	1	2
	Cambric	1–	1–	2–
Solution II	Muslin	1	1–	2–
	Cambric	1–	2–	3–
Solution III	Muslin	1	1	1–
	Cambric	1–	2	2–
Solution IV	Muslin	3	4	4–
	Cambric	3	4	4–

A study of the above table shows that the best color is produced when cloth is starched and not ironed, but that the ironing increases the yellowing only very slightly. The increased discoloration of the samples ironed and not starched must be attributed to the absence of starch rather than the effect of ironing. The difference due to the kind of soap used is very slight, showing very little tendency toward yellowing when starch is used on pieces washed with strongly alkaline soaps.

The purpose of the fourth investigation[1] was to determine the effect of different bluings with the above designated reagents. Solutions of direct dyes, Prussian blue, and ultramarine were tested and strength of solution was determined by actual testing until equivalent colors were produced. In order to tabulate results, samples were graded into seven lots with 1 representing the best color and 7 the poorest.

	SOLUTION I		SOLUTION II		SOLUTION III		SOLUTION IV		REMARKS
	Muslin	Cambric	Muslin	Cambric	Muslin	Cambric	Muslin	Cambric	
Ultramarine	1	1	1	1	1	1	3	4	
Methylene blue	7	7	7	7	7	7	7	7	Greenish tint
Commercial laundry bluing									
Blue	2	2	2	2	2	2	3	4	
Reddish Blue	1	1	1	1	1	1	4	4	
Commercial Prussian blue:									
I	5	5	6	6	5	5	7	7	Uneven in color
II	6	7	6	7	6	7	7	7	Greenish tint
Blank	5	5	5	5	5	5	7	7	

[1] The authors wish to acknowledge their indebtedness to Ida McKinney for assistance in this part of the investigation.

The table indicates that better color can be produced with bluing than without, and that the most desirable color is produced by ultramarine or aniline dye of a blue-purple hue. In practical laundry work the dye, being soluble, is easier to apply than ultramarine which is insoluble and causes streaks unless clothes are kept agitated in the solution. The least desirable color was produced by Prussian blue and methylene blue. No bluing covered the poor color produced by borax.

SUMMARY

The results of the above investigations lead to the following conclusions:

1. It is possible in laundering cotton materials to secure a very good color without boiling if naphtha or neutral soap and a good bluing—ultramarine or a reddish blue dye—are used.
2. Muslin retains its whiteness better than cambric.
3. If the material is rinsed in hot water, the yellow color produced by sodium carbonate is hardly noticeable.
4. Borax produced undesirable discoloration.
5. A white grade of corn starch does not discolor a fabric.
6. Ironing has very little effect on purity of color if moderate temperature is used.

No attempt was made to determine the chemical causes of yellowing and no explanation of results obtained can be offered except those already noted in the introduction.

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(28) Matthews, Loc. cit. p. 3.
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(30) Balderston, "Laundry Manual," Balderston & Limerick, 1224 Cherry St., Phila., Pa.
(31) Faragher, J. Ind. Eng. Chem., Aug. 1914, p. 640.
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THE VALUE OF BORIC ACID CANNING COMPOUND IN FOOD PRESERVATION

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Microörganisms and man subsist on the same foods. Whether a given foodstuff is to serve for human maintenance of microbiological growth is under natural conditions determined by their relative ability to reach, or obtain, and consume the substance in question. Man is limited as to the quantity which he may consume, whereas the microorganism, by the simple expedient of rapidly adjusting its population to the available food supply may, theoretically at least, utilize any available quantity of a foodstuff. In this struggle for a common necessity man is, therefore, in a sense at a disadvantage; and so it behooves him to devise means for preventing his seasonal surplus food supply from falling prey to his microscopic competitors.

To preserve a foodstuff for human consumption it must be rendered unavailable to bacteria, yeasts, molds, etc. Various means of food preservation are practiced in the home, as drying, salting, sugaring, and fermenting, but canning is probably the most popular and most commonly employed. The principle involved in canning is the destruction of the living microörganisms under such conditions that other bacteria will not be able to gain access to the food material. This may be successfully accomplished by placing the foodstuff in a container,

which may be readily and quickly sealed, and subjecting it to a sufficiently high temperature for an adequate period. Since some materials require a long exposure (3 hours or even more) at the temperature of boiling water, and excessive heating may mar the appearance of such foodstuffs, several attempts have been made to reduce the time or temperature for sterilization by introducing various chemicals, under the name of "canning compounds."

One of these compounds which is not infrequently used in the middle west contains boric acid as the active agent. It is the purpose of this paper to discuss the value of this chemical for food preservation.

The first question which naturally arises is whether the compound is efficient as a germicide. Is it capable of destroying bacteria under the conditions employed and recommended? If it is found to be efficient, we next ask whether its employment is necessary or superfluous. Will its use insure the keeping of foods which would otherwise spoil if canned by the cold pack process, for example? Then again there is the question of the possible harmfulness of the chemical in question, when employed in the quantity recommended. Before any chemical poison may be accepted as an aid to canning, information as to its efficiency, necessity for its use, and its possible injurious effect on the consumer is indispensible for an honest and trustworthy opinion. This paper is concerned primarily with the efficiency and necessity for using boric acid canning compounds.

GERMICIDAL EFFICIENCY OF BORIC ACID "CANNING COMPOUND"

The canning compound was bought on the open market in Minnesota and Iowa, and it consisted of 95 per cent boric acid and 5 per cent common salt. Fifty-nine packages were weighed and found to contain from 23.5 to 34 grams with an average of 28 grams per package. This quantity is supposedly sufficient for 4 quarts, thus allowing an average of 7 grams of canning compound per quart.

To ascertain its germicidal efficiency 7.25 grams per quart, which is a little higher than would be used on an average in practice, were employed. With this quantity of the compound in agar, the following results were obtained:

Bact. aerogenes and *Bact. grünthal* failed to grow and *Bact. acidi lactici* grew luxuriantly. *Bact. coli*, *Bact. communior*, the dysentery and para-typhoid organisms (*Bact. flexneri*, *Bact. paratyphoid A*, and *Bact. paratyphoid B*) grew very luxuriantly as did also *Bact. pullorum*. Among the spore-forming organisms employed, those requiring free oxygen and which would

therefore not find favorable conditions within a can (including organisms as *B. centrosporous*, *B. fusiformis*, *B. megatherium*, *B. mesentericus* and *B. subtilis*) were inhibited. The anaerobic spore-formers including such forms as *Clostridium sporogenes* and *Clostridium botulinum*[1] grew very luxuriantly. Growth was obtained with these organisms even when the concentration of the canning compound was increased to 1.6 per cent or more than twice that recommended for use.

It appears quite evident that the boric acid canning compound exerted a selective antiseptic action but that this effect was restricted to bacteria which are rarely associated with spoilage of canned foods, whereas such objectionable and dangerous forms as *Cl. sporogenes* and *Cl. botulinum* grew luxuriantly in its presence.

In order to ascertain whether boiling with the compound for 15 to 20 minutes, which is the time and temperature stated on the package to be adequate for food preservation, is sufficient to kill objectionable bacteria, a number of glucose agar tubes containing the compound which were maintained at the boiling temperature, were inoculated with cultures of *Cl. sporogenes* and *Cl. botulinum*. After exposure for-various periods (15, 20, 25, 30, 40, 50 and 60 minutes) the tubes were removed, allowed to cool in the air, and incubated at the body temperature. Growth was obtained in every instance. Similarly when canned peas, to which had been added the recommended quantity of canning compound, were placed in tubes, sterilized, inoculated with these anaerobic spore-producing organisms, and then boiled for 20 minutes, growth was obtained on subsequent incubation; and where the inoculum consisted of *Cl. botulinum*, the material was found to be fatal to guinea pigs on feeding.

EFFICIENCY OF CANNING WITH THE BORIC ACID COMPOUND

Although the foregoing experiments strongly indicate that the compound is inefficient for the purpose recommended, it is nevertheless conceivable that the conditions in practical canning may be more favorable to its action. The reaction of the food may have an effect or the types of organisms present may be peculiarly susceptible. A series of vegetables and other edibles was therefore prepared to test its efficacy for practical home canning.

The foodstuffs studied were asparagus, rhubarb, carrots, corn, string beans, and green peas. The materials were perfectly fresh, having been picked by laboratory assistants, or brought in from nearby farms, so that canning was begun within one to three hours after picking. The conditions were most favorable for keeping the foods if the method of canning employed were at all adequate. The canning was done by a woman who had had considerable successful experience in home preservation of foods by both the open kettle and cold pack methods and who was therefore perfectly familiar with the work.

The booklet accompanying the compound and directions on the package recommended 15 to 20 minutes boiling (depending on the nature of food material) in an open kettle, with $\frac{1}{4}$ package of the chemical

[1] In compliance with the recommendations of the Society of American Bacteriologists the term *Clostridium botulinum* is employed for the more commonly known *Bacillus botulinus*.

per quart of material prepared. The directions were carefully and explicitly followed. A number of pint jars of each food were prepared by various methods as indicated below giving four series of samples. Several jars of each series were stored in the basement, 19 to 20°C., the laboratory, 23 to 28°C., and the 37°C. incubator.

Series 1. Canned as directed for compound (15 to 20 minutes boiling in open kettle) but *without* the addition of the chemical. The purpose of this was to have a basis for gauging the effect of the boric acid compound.

Series 2. Prepared in the same manner as "Series 1," but containing the recommended quantity of boric acid canning compound.

Series 3. The jars in this series were prepared by the cold pack method as described in Farmers' Bulletin No. 839, U. S. Dept. of Agriculture.

Series 4. These cans were prepared with the compound but not heated, the purpose being to ascertain whether the compound, of itself, was capable of preventing the growth of the bacteria normally present on the food materials.

Asparagus. All jars of asparagus prepared with boric acid (but without heat) quickly spoiled and the bacterial count rose very rapidly. On 24 hours standing a count of 36,000 rose to 22,000,000 per cubic centimeter, so that the boric acid was certainly not functioning as an efficient antiseptic. Organisms normally present on asparagus grew luxuriantly in its presence.

Examination after 22 days' storage showed the 4 jars prepared by the open kettle method (20 minutes boiling) to be spoiled as were also those (4 jars) put up with the canning compound. The cold pack specimens (8 jars), on the other hand, were all in perfect condition, even after a year's storage.

It is interesting to note that those jars prepared without boric acid spoiled with the evolution of obnoxious, objectionable odors, whereas, in the presence of the boric acid, spoilage was indicated by evolution of gas and bulging of caps but there was no offensive odor. The boric acid evidently exerted a selective antiseptic action on some of the proteolytic, putrefactive forms. This characteristic seems particularly objectionable because it deprives the consumer of his most available test to detect spoilage, namely, the odor of decomposition.

Rhubarb. All jars of rhubarb kept irrespective of the method of canning employed. Merely covering with hot or cold water was adequate to produce a keeping product. The high natural acidity of this substance is evidently very effective as a preservative so that the employment of a poisonous chemical is superfluous.

Carrots. Freshly picked carrots were carefully cleaned, cut, placed in jars, covered with water containing the required amount of canning compound (0.77 per cent), then sealed and stored in the basement and in the room. They all spoiled and the bacterial count of 2000 rose in 8 days to 33,000,000 per cubic centimeter. Organisms normally present on carrots were therefore not prevented from growing by the compound.

Four jars of carrots were prepared by the open kettle method, without any compound, 10 with the compound, and 6 by the cold pack method. These were stored in the basement, room, and 37°C. incubator.

Of the 10 jars canned with the compound only 1 (stored in the basement) was found to be keeping after 3½ to 5 weeks. All of 6 jars prepared by the cold pack process remained in good condition even when stored at the body temperature for 3 months.

Corn. As was to be expected, canning by the open kettle (without compound) was entirely inadequate. All of 4 jars prepared and kept in the basement or at 37°C. spoiled.

Of 6 jars canned with the compound (20 minutes boiling in open kettle with 0.77 per cent boric acid canning compound) 5 kept. These included 3 stored at 37°C. and 2 in the basement (19–22°C.). One of the basement samples was spoiled as indicated by marked blackening of the cap and a very high content of anaerobes but there was no objectionable odor. Microscopic examination showed numerous cocci and rods.

Among the 6 cold pack jars there was also one spoiled.

For corn, then, the results obtained by canning with the compound compared favorably with the cold pack process.

String Beans. String beans (3 jars) prepared with the canning compound without heating all spoiled. There was considerable sediment, the liquor became milky, and the beans floated. The odor was off, but not considered objectionable. Anaerobic bacteria were present in $\frac{1}{1,000,000}$ cc. The compound of itself did not prevent the growth of bacteria normally present on string beans, nor prevent spoilage.

Four jars of string beans were prepared by the open kettle (20 minutes boiling), 14 by the open kettle with the canning compound, and 6 by the cold pack. All of the open kettle samples without boric acid spoiled, and in the presence of the compound spoilage was 50 per cent, 25 per cent, and 75 per cent when stored in the basement (6 jars), laboratory (4 jars), and 37°C. (4 jars) respectively. The 6 jars prepared by the cold pack and stored at the various temperatures all remained in perfect condition even after a year.

Peas. Peas prepared with the compound but without boiling spoiled in a few days in the basement or room. The peas were disintegrated and gassy, and the liquor milky. Bacterial examination of a jar before sealing (at time of preparation) showed but 25 bacteria per cubic centimeter at 22°C. and anaerobes were present in 1 cc. but not in smaller quantities. On reëxamination after 2½ weeks storage, the count was 150,000 per cubic centimeter and anaerobes were present in $\frac{1}{10,000}$ cc. of the liquor. The compound was not capable of preventing growth of bacteria normally present on green peas nor disintegration of the product.

Four jars were prepared by the ordinary open kettle (20 minutes boiling), 17 jars with the compound, and 5 by the cold pack. Of the 17 jars prepared with the boric acid compound 11 or about 65 per cent spoiled. All of the 5 cold pack jars remained in good condition at the last examination which was after a year's storage.

VALUE OF THE CANNING COMPOUND IN PRESENCE OF CL. BOTULINUM

Whatever method of canning may be employed, a prime requirement must inevitably be that it be effective against organisms known to be responsible for food poisoning, particularly botulism. A series of experiments was therefore executed to ascertain whether food infected with *Cl. botulinum* may be successfully preserved by use of the boric acid compound, or if not preserved, whether the organism is prevented from producing its powerful toxin.

Asparagus was infected with the liquor of an old jar of spoiled peas and canned with the compound as recommended on the package. (The spoilage of the peas used was due to *Cl. botulinum*.) After about one month's storage two guinea pigs were inoculated with 0.5 cc. of

liquor from 2 jars. They died in 24 hours. Two other jars were opened after about two months storage. A rat, fed some of the material from 1 jar, died in 5 days. Some of the liquor of the second jar was fed to a rat and guinea pig. The rat died in 3 days; the guinea pig succumbed overnight.

Similar results were obtained with string beans and peas. String beans and peas inoculated with a culture of *Cl. botulinum*, and canned with the compound was fed to rats and guinea pigs. Five guinea pigs and one of three rats died.

A guinea pig, fed with a month old sample of green peas which had been inoculated with *Cl. botulinum* and canned with the compound, survived, but on feeding other jars of peas, prepared at the same time after an additional month of storage, to two guinea pigs, both died in 24 to 72 hours.

It would appear from the foregoing that, if a food stuff happens to be contaminated with the organisms of botulism, attempts to preserve it with the canning compound will probably be futile.

DELETERIOUS EFFECTS OF THE BORIC ACID CANNING COMPOUND

It is not the purpose or intention to discuss here the possible harmful effects of the compound on the human body, for this paper is limited to experimentally observed facts and we have not studied the human subject, but the following observations on young rabbits, made by my collaborator, Mr. J. C. Weldin, seem very suggestive.

Two young rabbits, which will be referred to as the test animals, were fed on alternate mornings with oats and ground alfalfa to which had been added sufficient of the compound (in water solution) to make a concentration of 8.8 grams per quart of dry feed. The other two rabbits (controls) were fed the same materials in the morning, except that in place of the solution of boric acid compound an equal quantity of tapwater was added. The evening feed of both tests and controls contained no compound and was as varied as possible (included considerable vegetables, as lettuce, carrots, string beans, etc.). The rabbits were observed for 44 days, and their consumption of feed and increase in growth noted.

TABLE 1

Influence of presence of boric acid canning compound on growth of young rabbits

	RABBIT NUMBER	INITIAL WEIGHT	WEIGHT 44 DAYS LATER	GAIN	INCREASE IN BODY WEIGHT
		grams	*grams*	*grams*	*per cent*
Test	A*	914	1219	305	32.9
	B*	810	1158	348	43.0
Control	C*	735	1249	514	70.0
	D	1054	1750	694	65.8

* From same litter.

The test animals, as may be seen from table 1, increased in weight only about half as fast as the controls. The experiment was stopped after 44 days because of the emaciated condition of the test rabbits. They were put in a pen with a large number of normal rabbits, but they were unable to recover. Their appetites were poor and they died in a short while. Apparently the compound had produced an irreparable injury.

SUMMARY

A "canning compound" now on the market in the middle western states was studied as to its efficiency and reliability as a food preservative.

The compound, which is about 95 per cent boric acid mixed with 5 per cent sodium chloride, was found to possess a selective antiseptic action. Some varieties of colon bacilli and the spore forming aerobic bacteria tested were inhibited, but the colon forms which have been associated in the past with food poisoning (*Bact. enteritidis*, *Bact. paratyphi*, and *Bact. typhi*) and the anaerobic spore formers (*Cl. sporogenes* and *Cl. botulinum*) grew, the latter very readily, in the concentration of the compound which would be employed in canning.

The *Cl. botulinum* grew in twice the concentration and survived three times the period of boiling recommended for canning with the compound.

The bacteria normally present on asparagus, corn, carrots, string beans, and green peas grew luxuriantly in the presence of the compound.

Practical experiments with various materials listed in the accompanying table showed that canning with the boric acid compound was accompanied by very frequent spoilage and that the method is far inferior to the "cold pack" process recommended by the U. S. Department of Agriculture.

TABLE 2

Relative efficiency of "cold pack" and "boric acid canning compound" methods of food preservation

MATERIAL	COLD PACK			CANNING COMPOUND		
	Jars canned	Spoiled		Jars canned	Spoiled	
		Number	Per cent		Number	Per cent
Asparagus	8	0	0	4	4	100.0
Rhubarb	6	0	0	4	0	0
Carrots	6	0	0	10	9	90.0
Corn	6	1	16.7	6	1	16.7
String beans	6	0	0	14	6	42.8
Green peas	5	0	0	17	11	64.8

Asparagus, string beans, and green peas, when artificially infected with the botulinus bacteria and canned with the compound, were, on subsequent feeding, found to be deathly to rats and guinea pigs. The method is therefore potentially dangerous as it affords no adequate safeguard against this dreadful form of food poisoning.

RELATIVE COST OF GAS AND ELECTRICITY[1]

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In those parts of the country where electricity is sufficiently inexpensive to be used as fuel for cooking purposes, a question frequently asked is, "Which is the more expensive, gas or electricity?" The results of work done by a class in Experimental Cookery, University of Washington, Spring Quarter, 1921, in an effort to answer this question, are given in the following discussion and tables.

Three stoves, two gas and one electric, which were family size ranges of standard makes, were used for the experimental work. A second electric range, the oven of which was inefficient, was used for plate work only.

The method of using the electric ranges was based on previous experimental work done with stove No. 1, which resulted in a few corrections of the manufacturer's published directions for the use of the stove, in the accurate correlation of the factors of time, temperature, and fuel consumption for the different cooking processes, and in the more efficient use of the range.

Oven work, in the case of the electric range, had the double control of the heat indicator and a thermometer. Heavily insulated four inch plugs were put through the walls of the two ovens used for baking and for boiling, so that thermometers could be inserted into both. This made possible a more exact paralleling of oven performances in gas and electric ranges.

The temperatures used as guides in baking operations were obtained from the following sources; Oven Temperatures During Baking, Minna Denton, Experimental Kitchen, Office of Home Economics, U. S. Department of Agriculture; Some Attempts to Standardize Oven Temperatures for Cookery Processes, May B. Van Arsdale, Teachers College Bulletin; Fats and Oils in Cookery, Cooking Temperatures, University of Illinois Bulletin, July 23, 1917.

It is interesting to note that, with few exceptions, the manufacturer's directions for the operation of the electric oven by indicator control

[1] Presented at the Fifteenth Annual Meeting of the American Home Economics Association, Corvallis, Ore., August, 1922.

[2] Grateful acknowledgment is made to Dr. Frederick A. Osborne, head of the Physics Department of the University of Washington for his helpful suggestions and criticisms throughout the experiments.

resulted in practically the same temperatures as those advocated by the above authorities for the processes which we used.

The preparation and cooking of all dishes was carefully standardized. The following factors controlled the processes used:

1. A standard recipe was adopted for each preparation, and ingredients were weighed.
2. Definitely defined procedures for combining ingredients were followed.
3. Identical utensils were used for the same product in the case of each stove.
4. The placing of utensils in ovens and on plates was standardized.
5. The factors of time, temperature, and degree of success in attaining standard products, were considered at each stage in the cooking process.
6. Each experiment was repeated a sufficient number of times to have results check within 2 per cent, which we believe to be our limit of experimental error.

Menus for a week for a family of five were used as the basis for the selection of dishes to be prepared. The menus were planned to take into consideration the requirements of the well balanced meal, the use of left-overs, the effective use of the particular stove, and the inclusion of a sufficient number of oven and plate operations to make the total fuel consumption representative of the fuel consumption of the user of gas or electricity for cooking purposes when the most efficient utilization is made of fuel.

Electric attachments, such as the toaster and percolator, were not used because the use of parallel attachments on the gas stove is not possible in every case and also because not all users of electric ranges possess them.

The boiler, or boiling oven, which is a part of one of the electric ranges was used only in the preparation of those products which one would ordinarily cook covered on top of the stove, and for one baking operation where food quantities did not warrant the heating of the larger baking oven.

The more extensive use of the boiler did not seem justifiable because it is not a part of many standard makes of electric ranges and because, in many cases, its use does not result in satisfactory products.

The "fireless ovens" of the gas ranges were not used because they also are not a part of the ordinary gas stove.

Tables showing details of fuel consumption and cost

	FUEL CONSUMPTION				COST			
	Electric		Gas		Cost at $ 025 per K.W.H.		Cost at $.00143 per cu. ft.	
	K.W.H., Stove No. 1	K.W.H., No. 2 Oven not used	Cu. ft., No. 3	Cu. ft., No. 4	No. 1	No. 2	No. 3	No. 4
MENU—SUNDAY								
Breakfast								
Bananas								
Muffins (12)	0.94 oven		20 05 oven	15.50 oven	$.0235		$.0287	$.0222
Scrambled eggs (6)	0.18 plate	0.11 plate	1.01 plate	1.08 plate	.0045	$.0028	.0014	.0015
Coffee—1 qt. water simmered 3 min. on stored heat-electric stoves	0.37 plate	0.18 plate	1.95 plate	2.27 plate	.0093	.0045	.0028	.0032
Totals	*1.49*		*23.01*	*18.85*	*.0373*		*.0329*	*.0269*
Dinner								
Roast leg of lamb—3½ lb.	1.39 oven		58.51 oven	45.60 oven	.0348		.0837	.0652
Boiled potatoes—5 lbs. ½ used	0.50 boiler	0.38 plate	7.99 plate	6.68 plate	.0125	.0095	.0114	.0096
Buttered asparagus—1½ lbs.	0.77 plate	0.26 plate	5.69 plate	5.80 plate	.0193	.0065	.0081	.0083
Prune whip—½ used 1 lb. prunes—½ c. water	0.35 plate	0.21 plate	2.27 plate	2.02 plate	.0088	.0053	.0032	.0029
Tea—1 qt. water	0.37 plate	0.18 plate	1.73 plate	1.89 plate	.0093	.0045	.0025	.0027
4 qts. water for potatoes and asparagus	0.87 plate	0.63 plate	5.29 plate	5.52 plate	.0218		.0076	.0079
Totals	*4.25*		*81.48*	*67.51*	*.1065*		*.1165*	*.0966*
Supper								
Pineapple and cheese salad								
Brownbread sandwiches								
Cocoa—1½ qts.	0.48 plate	0.27 plate	3.56	3.35 plate	.0120	.0068	.0051	.0048
Totals	*0.48*	*0.27*	*3.56*	*3.35*	*.0120*	*.0068*	*.0051*	*.0048*
Totals for the day	6.22		108.05	89.71	.1558		.1545	.1283
MENU—MONDAY								
Breakfast								
Stewed prunes (l.o.)*								
Cream of wheat 1½ c. to 5 c. water ½ used	0.44 plate	0.40 plate	3.46 plate	2.15 plate	$.0110	.0100	.0049	.0031
Soft cooked eggs (6)	0.41 plate	0.24 plate	2.21 plate	2.65 plate	.0103	.0060	.0032	.0038
Toast—10 slices	0.31 broiler	0.21 broiler	9.24 broiler	8.00 broiler	.0078	.0053	.0132	.0114
Coffee—1 qt. water	0.37 plate	0.18 plate	1.95 plate	2.27 plate	.0093	.0045	.0028	.0032
Water for cream of wheat—3 qts.	0.75 plate	0.42 plate	4.25 plate	4.43 plate	.0188	.0105	.0061	.0063
Totals	*2.28*	*1.45*	*21.11*	*19.50*	*.0572*	*.0363*	*.0302*	*.0278*

*L.o.—left-over.

	FUEL CONSUMPTION				COST			
	Electric		Gas		Cost at $.025 per K.W.H.		Cost at $.00143 per cu. ft.	
	K.W.H., Stove No. 1	K.W.H., No. 2 Oven not used	Cu. ft., No. 3	Cu. ft., No. 4	No. 1	No. 2	No. 3	No. 4
Luncheon								
Cheese sauce on toast —1 qt.	0.33 plate	0.18 plate	2.54 plate	1.85 plate	.0083	.0045	.0036	.0026
Hard cooked eggs (6)	0.73 plate	0.46 plate	3.35 plate	4.01 plate	.0183	.0115	.0048	.0057
Toast—10 slices	0.31 broiler	0.21 broiler	9.24 broiler	8.00 broiler	.0078	.0053	.0132	.0114
Lettuce salad								
Preserves								
Tea—1 qt. water	0.37 plate	0.18 plate	1.73 plate	1.89 plate	.0093	.0045	.0025	.0027
Bread and butter								
Totals	*1.74*	*1.03*	*16.86*	*15.75*	*.0437*	*.0258*	*.0241*	*.0224*
Dinner								
Cottage Pie (l.o. meat and potato)	1.11 oven		19.39 oven	18.05 oven	.0278		.0278	.0258
Spinach (2.2 lbs.)	0.45 plate	0.28 plate	3.06 plate	2.99 plate	.0113	.0070	.0044	.0043
Fruit gelatine 1 qt. water	0.37 plate	0.18 plate	1.72 plate	1.89 plate	.0093	.0045	.0025	.0027
Tea—1 qt. water	0.37 plate	0.18 plate	1.72 plate	1.89 plate	.0093	.0045	.0025	.0027
Totals	*2.30*		*25.89*	*24.82*	*.0577*		*.0372*	*.0355*
Totals for day	6.32		63.86	60.07	.1586		.0915	.0857
MENU—TUESDAY								
Breakfast								
Oranges								
Fried cream of wheat (l.o.)	0.75 plate	0.35 plate	6.24 plate	5.26 plate	$.0188	$.0088	$.0089	$.0075
Syrup (1½ pts.)	0.37 plate	0.15 plate	2.85 plate	2.23 plate	.0093	.0038	.0041	.0032
Bacon—8 slices (⅓ x 7 x 1½)	0.30 plate	0.14 plate	1.79 plate	1.80 plate	.0073	.0035	.0026	.0026
Coffee—1 qt. water	0.37 plate	0.18 plate	1.95 plate	2.27 plate	.0093	.0045	.0028	.0032
Totals	*1.79*	*0.82*	*12.83*	*11.56*	*.0449*	*.0206*	*.0184*	*.0165*
Luncheon								
Creamed salmon— 1 qt'	0.36 plate	0.19 plate	3.01 plate	2.45 plate	.0091	.0048	.0043	.0035
Bread and butter								
Lettuce salad								
Radishes								
Canned fruit								
Tea—1 qt. water	0.37 plate	0.18 plate	1.73 plate	1.89 plate	.0093	.0045	.0025	.0027
Totals	*0.73*	*0.37*	*4.74*	*4.34*	*.0184*	*.0093*	*.0068*	*.0062*
Dinner								
Farmers' stew—2 lbs. round steak	1.27 plate	0.84 plate	14.48 plate	12.58 plate	.0318	.0210	.0206	.0180
Baked potatoes—5 lbs. ¾ used	1.20 oven		40.51 oven	35.72 oven	.0300		.0579	.0511
Sponge cake—standard recipe	0.81 oven		18.30 oven	14.58 oven	.0203		.0262	.0209
Pineapple								
Tea—1 qt. water	0.37 plate	0.18 plate	1.73 plate	1.89 plate	.0093	.0045	.0025	.0027
Stew—1 qt. water	0.37 plate	0.18 plate	1.73 plate	1.89 plate	.0093	.0045	.0025	.0027
Totals	*4.02*		*76.75*	*66.66*	*.1007*		*.1097*	*.0954*
Totals for day	6.54		94.32	82.56	.1640		.1349	.1181

	FUEL CONSUMPTION				COST			
	Electric		Gas		Cost at $.025 per K.W.H.		Cost at $.00143 per cu. ft.	
	K.W.H., Stove No. 1	K.W.H., No. 2 Oven not used	Cu. ft., No. 3	Cu. ft., No. 4	No. 1	No. 2	No. 3	No. 4
MENU—WEDNESDAY								
Breakfast								
Poached eggs (6).....	0.16 plate	0.07 plate	0.92 plate	1.02 plate	$.0040	$.0018	$.0013	$.0015
Toast—10 slices.....	0.31 broiler	0.21 broiler	9.24 broiler	8.00 broiler	.0078	.0053	.0132	.0114
Marmalade								
2 qt. water for coffee and eggs.....	0.60 plate	0.32 plate	3.27 plate	3.03 plate	.0150	.0080	.0047	.0043
To simmer coffee.....			0.23 plate	0.38 plate			.0003	.0005
Totals.....	*1.07*	*0.60*	*13.66*	*12.43*	*.0368*	*.0151*	*.0195*	*.0177*
Luncheon								
Hash (l.o. stew and potatoes).....	0.65 plate	0.35 plate	5.21 plate	5.36 plate	.0163	.0088	.0075	.0077
Cold slaw								
Bread and butter								
Sponge cake (1.o.)								
Jelly								
Tea—1 qt. water.....	0.37 plate	0.18 plate	1.73 plate	1.89 plate	.0093	.0045	.0025	.0027
Totals.....	*1.02*	*0.53*	*6.94*	*7.25*	*.0256*	*.0133*	*.0100*	*.0104*
Dinner								
Pot roast (6 lbs.) with vegetables.....	1.67 plate	0.96 plate	21.69 plate	18.59 plate	.0418	.0240	.0310	.0266
Grape fruit salad								
Cookies—22—2¼" dia.	0.99 oven		17.53 oven	12.43 oven	.0248		.0251	.0178
Tea—1 qt. water.....	0.37 plate	0.18 plate	1.73 plate	1.89 plate	.0093	.0045	.0025	.0027
Water for meat—1 qt.	0.37 plate	0.18 plate	1.73 plate	1.89 plate	.0093	.0045	.0025	.0027
Totals.....	*3.40*		*42.68*	*34.80*	*.0852*		*.0611*	*.0498*
Totals for day.....	5.49		62.78	54.48	.1476		.0906	.0779
MENU—THURSDAY								
Breakfast								
Oranges								
Oatmeal— 1 c. rolled oats 3 c. water.....	0.74 plate	0.60 plate	5.91 plate	5.46 plate	$.0185	$.0150	$.0085	$.0078
Soft cooked eggs (6)..	0.41 plate		2.21 plate	2.65 plate	.0103		.0032	.0038
Baking powder biscuit—basis 2 c. flour.....	0.99 oven		17.38 oven	16.18 oven	.0248		.0249	.0231
	custard on s	tored heat						
Coffee—1 qt. water...	0.37 plate	0.18 plate	1.95 plate	2.27 plate	.0093	.0045	.0028	.0032
2 qt. water—oatmeal.	0.60 plate	0.32 plate	3.27 plate	3.03 plate	.0150	.0080	.0047	.0043
2 qt. water—custard..	0.60 plate				.0150			
Totals.....	*3.71*		*30.72*	*29.59*	*.0929*		*.0441*	*.0422*
Luncheon								
Macaroni and cheese to boil macaroni 3.3 oz. to 2 qt. water—1 pt. white sauce.....	0.57 boiler		4.74 plate	4.85 plate	.0143		.0068	.0069
	0.19 plate		1.60 plate	1.38 plate	.0048		.0023	0.020

	FUEL CONSUMPTION				COST			
	Electric		Gas		Cost at $.025 per K.W.H.		Cost at $.00143 per cu. ft.	
	K.W.H., Stove No. 1	K.W.H., No. 2 Oven not used	Cu. ft., No. 3	Cu. ft., No. 4	No. 1	No. 2	No. 3	No. 4
To bake	0.61 boiler		20.70 oven	18.00 oven	.0153		.0296	.0257
Bread and butter								
Tomato salad								
Fruit								
Tea—1 qt. water	0.37 plate	0.18 plate	1.73 plate	1.89 plate	.0093	.0043	.0025	.0027
Totals	*1.74*		*30.77*	*26.12*	*.0437*		*.0412*	*.0373*
Dinner								
Sliced pot roast (l.o.)								
Gravy (l.o.) heated	0.13 plate	0.07 plate	0.79 plate	0.86 plate	.0033	.0018	.0011	.0012
Boiled potatoes—								
5 lbs. ¼ used	0.50 boiler	0.38 plate	7.99 plate	6.68 plate	.0125	.0095	.0114	.0096
Cucumber salad								
Custard—3 eggs, 2 c. milk—5 individuals			27.41 oven	20.30 oven			.0392	.0290
Tea—1 qt. water	0.37 plate	0.18 plate	1.73 plate	1.89 plate	.0093	.0045	.0025	.0027
2 qt. water—potatoes	0.60 plate	0.32 plate	3.27 plate	3.03 plate	.0150	.0080	.0047	.0043
2 qt. water—custard			3.27 plate	3.03 plate			.0047	.0043
Totals	*1.60*		*44.46*	*35.74*	*.0401*		*.0626*	*.0511*
Totals for day	7.05		105.95	91.45	.1767		.1479	.1306
MENU—FRIDAY								
Breakfast								
Fresh fruit								
French toast (l.o. toast —15 half slices)	0.39 plate	0.24 plate	2.75 plate	3.29 plate	$.0098	$.0060	$.0039	$.0047
Syrup	0.37 plate	0.15 plate	2.85 plate	2.23 plate	.0093	.0038	.0041	.0032
Bacon	0.30 plate	0.14 plate	1.79 plate	1.80 plate	.0075	.0035	.0026	.0026
Coffee—1 qt. water	0.37 plate	0.18 plate	1.95 plate	2.27 plate	.0093	.0045	.0028	.0032
Totals	*1.43*	*0.71*	*9.34*	*9.59*	*.0359*	*.0178*	*.0134*	*.0137*
Luncheon								
Escalloped potatoes (2.6 lbs.—l.o.)								
White sauce—1 pt.	0.19 plate		1.59 plate	1.38 plate	.0048		.0023	.0020
To bake	on stored	heat after pie	11.92	9.78			.0170	.0140
String bean salad	shell—oven		baked in hot	ovens				
Jelly—bread and butter			after pie shells					
Tea—1 qt. water	0.37 plate	0.18 plate	1.73 plate	1.89 plate	.0093	.0045	.0025	.0027
Totals	*0.56*		*15.24*	*13.05*	*.0141*		*.0218*	*.0187*
Dinner								
Boiled halibut—2 lbs.	0.47 plate		4.48 plate	4.21 plate	.0118		.0064	.0060
Egg sauce—white								
sauce 1 pt	0.19 plate	0.10 plate	1.60 plate	1.38 plate	.0048	.0025	.0023	.0020
Hard cooked eggs	0.73 plate	0.46 plate	3.35 plate	4.01 plate	.0183	.0115	.0048	.0057
Mashed potatoes—								
5 lbs. ¼ used	0.50 boiler	0.38 plate	7.98 plate	6.68 plate	.0125	.0095	.0114	.0096
Spinach	0.45 plate	0.28 plate	3.07 plate	2.99 plate	.0113	.0070	.0044	.0043
Tea—1 qt. water	0.37 plate	0.18 plate	1.73 plate	1.89 plate	.0093	.0045	.0025	.0027

	FUEL CONSUMPTION				COST			
	Electric		Gas		Cost at $.025 per K.W.H.		Cost at $.00143 per cu. ft.	
	K.W.H., Stove No. 1	K.W.H., No. 2 Oven not used	Cu. ft., No. 3	Cu. ft., No. 4	No. 1	No. 2	No. 3	No. 4
Butterscotch pie shell —10"	1.08 oven		17.30 oven	16.98 oven	.0270		.0247	.0243
Filling—3 cups	0.63 plate		4.66 plate	3.72 plate	.0158		.0056	.0053
4 qt. water—fish and potatoes	0.87 plate	0.40 plate	5.29 plate	5.52 plate	.0218	.0100	.0076	.0079
Totals	*4.82*		*44.98*	*43.17*	*.1326*		*.0697*	*.0678*
Totals for day	6.81		69.56	65.81	.1826		.1049	.1002
MENU—SATURDAY								
Breakfast								
Fresh fruit								
Muffins (12)	0.94 oven		20.05 oven	15.50 oven	$.0235		$.0287	$.0222
Scrambled eggs (6)	0.18 plate	0.12 plate	1.01 plate	1.09 plate	.0045	.0030	.0014	.0015
Coffee—1 qt. water	0.37 plate	0.18 plate	1.95 plate	2.27 plate	.0093	.0045	.0028	.0032
Total	*1.49*		*23.01*	*18.85*	*.0373*		*.0329*	*.0269*
Luncheon								
Cottage cheese salad								
Bread and butter								
Canned pears								
Cookies (l.o.)								
Tea—1 qt. water	0.37 plate	0.18 plate	1.73 plate	1.89 plate	.0093	.0045	.0025	.0027
Totals	*0.37*	*0.18*	*1.73*	*1.89*	*.0093*	*.0045*	*.0025*	*.0027*
Dinner								
Broiled steak—1½ lbs.	0.56 plate		2.35 plate	3.50 plate	.0140		.0034	.0050
Hashed browned potatoes l.o.	0.65 plate	0.35 plate	5.21 plate	5.36 plate	.0163	.0088	.0075	.0077
Asparagus—1½ lbs.	0.77 plate	0.26 plate	5.69 plate	5.80 plate	.0193		.0080	.0083
Strawberry shortcake on basis 2 c. flour	0.99 oven		17.38 oven	16.18 oven	.0248		.0249	.0230
Tea—1 qt. water	0.37 plate	0.18 plate	1.73 plate	1.89 plate	.0093	.0045	.0025	.0026
2 qt. water for asparagus	0.60 plate	0.32 plate	3.27 plate	3.03 plate	.0150	.0080	.0047	.0043
Totals	*3.94*		*35.63*	*35.76*	*.0987*		*.0480*	*.0509*
Totals for day	5.80		60.37	56.50	.1453		.0834	.0805
Totals for the week (21 meals)	44.23		565.39	500.34	1.1063		$.8077	$.7213

The work recorded in this report for the electric ranges was done with a voltage of one hundred and twenty. In case of the gas ranges, four inches of pressure were used, and the gas showed an average of five hundred and fifteen British thermal units per cubic foot.

The rates used for gas and electricity were those in effect in Seattle, April to July 1921, i.e., $1.41 per thousand cubic feet of gas, and 2½ cents per kilowatt hour. Both rates quoted take into consideration the reduction per thousand feet of gas and per K.W.H. of electric current

granted to users of more than the minimum amounts of fuel designated in the company's sliding scale of prices. However, it is of course true that gas rates are considerably lower than this in many localities, and that electricity rates, even for cooking purposes are often much higher.

CONCLUSIONS

1. Using the cost of electricity as that based on fuel consumption in the case of stove No. 1 at $1.10 per week, and the cost of gas as $.77 (average of fuel consumption for stoves Nos. 3 and 4), electricity is 44 per cent more expensive than gas for cooking purposes as exemplified by these 21 meals.

2. It is evident that the plates of stove No. 2 (electric) are much more efficient than those of stove No. 1 (electric.) If we were to consider the oven of stove No. 1 and the plates of stove No. 2 as combined in an improved electric range, the cost of preparing meals for a family of five for one week using electricity as fuel, would be practically the same, $.79, as the cost of gas used in these experiments for the same operations. The total fuel consumption for this imaginary electric range would be 31.69 K.W.H. as opposed to 44.23 K.W.H. for stove No. 1.

3. Reports of housewives, who formerly used gas for cooking purposes and now use electricity, strengthen the conviction that, at the rates quoted and for the family of average size, there need not necessarily be any great difference in the cost of the two fuels in this locality.

4. This statement needs to be qualified further, however, by calling attention to the fact that the cost of heating water, except that used directly in the cooking processes, has not been estimated in this work. If water for dish washing and other purposes had to be heated by electric current, the expense of using it would undoubtedly be considerably greater than that of using gas. The difference would then depend largely upon the amount of water heated during a given period and whether or not special equipment and a lower rate were obtainable when water was to be electrically heated.

5. The careful control of gas consumption which was exercised during these experiments might be paralleled in the case of oven operations, in those ranges equipped with automatic temperature controls. If gas ranges without such controls are used, the greater fuel consumption resulting from careless household methods of operation would appreciably cut down the difference, indicated in (1), of using gas and electricity for cooking. This would practically equalize the two, even though there

were some increase in electric current used, due also to less careful regulation.

6. The fact that the flow of electricity can be controlled by the snap switches at full, medium, and low, and that the oven must be carefully operated in order to secure satisfactory results, tends to encourage more economical use of electricity than of gas.

7. In order to have a basis for comparison, the fuel consumption and cost of plate and oven operations were figured for each stove, excluding only those plate operations, eight in all, which were not used in the case of stove No. 2, and necessarily restricting figures for oven processes to the one electric and two gas ranges.

The division of fuel consumption and cost between plate and oven operations is as follows:

	STOVE NO. 1	STOVE NO. 2	STOVE NO. 3	STOVE NO. 4
For plate operations fuel consumption	28.60 K.W.H.	16.06 K.W.H.	188.66 cu. ft.	179.84 cu. ft.
—cost	$.715	$.402	$.279	$.257
For oven operations fuel consumption	11.98 K.W.H.		334.15 cu. ft.	278.80 cu. ft.
—cost	$.299		$.478	$.394

These figures indicate a uniformly greater cost of operating electric plates than of operating gas plates at the rates used. This difference would probably be partially equalized by the increased cost of using gas plates under the ordinary careless conditions which obtain in many, if not most, households.

8. In these 21 meals, the oven was used for baking 11 times. A less generous use of the oven would favor the use of the gas from the standpoint of economy; for it is the uninsulated gas oven which is so expensive a user of fuel. A more generous use of the oven, as when baking the family supply of bread or using a larger number of oven-roasted cuts of meat, would, on the other hand, tend to favor the use of the electric range under these conditions.

9. For long time and high temperature processes, the electric oven is more economical than the gas ovens at the rates used, showing the value of the heavy insulation of the electric oven making baking on stored heat successful. If the baking time is short, the cost in the two cases is practically the same. Under careless household management (with the exception again of the automatic operation of gas ovens) the advantage indicated of electric over gas ovens, would be considerably increased.

10. The use of stored heat in the electric oven for the baking of a second product after the removal of the first, still further increases the advantage of the electric oven over gas.

11. Fuel consumption for the electric range may be somewhat lessened if attachments are used. For example, .31 K.W.H. is required to prepare toast as in the experiments, using the broiler, as opposed to .15 K.W.H. if an electric toaster is used. A corresponding reduction in fuel consumption and cost also results in the case of gas, if a toaster over a plate is used instead of the broiler.

12. The detailed reports of fuel consumption and the totals given may of course be used as a basis for figuring the comparative cost per week of using gas and electricity for cooking purposes under the conditions of this experimental work, at rates other than those quoted here. Where gas of this same or even greater fuel value may be purchased for 90 cents or $1.00 per thousand, and where electric currents costs from 5 to 10 cents per kilowatt hour, naturally electricity does not compete at all with gas as a household fuel, on a cost basis.

THE DIETITIAN: A PROPHECY[1]

RUTH WHEELER

University of Iowa Medical College

The dietitian of the future, we may hope, will be a composite of all that is best of all of us, leaving out all of our weaknesses and defects; her preparation will include all the elements we are glad to have had in ours, with all the others that we wish we might have had; her training will include the best of the training now given in all the hospitals we represent, and will leave out things we are now obliged to include in order to take care of necessary routine; her experience as a graduate dietitian will include all the opportunities we value most, and all those possible opportunities which we see only as tempting prizes, hung tantalizingly just out of our reach. Her future is a rosy one.

Her preparation will be begun with her grandmother—we hope that it has already begun—for she will have perfect and abundant health, which will contribute a foundation for physical and spiritual poise. Her disposition will

[1] Presented at the Fifth Annual Meeting of the American Dietetic Association, Washington, October, 1922.

be incurably cheerful, optimistic, and generous, so that if unpleasant little things *should* ever occur, she would habitually put the best possible interpretation upon them. Her inheritance of poise, generosity, and reserve force will make it possible for her to accomplish as a reality what we now hold as an ideal; constant progress in service and cooperation in every relation, rather than progress in the acquisition of greater power and privilege. She will know how to keep herself in good condition.

Aside from her inherited preparation, she will hold an academic degree, with a home economics major, based on strong training in physics, physiology, bacteriology, chemistry (general, quantitative, organic, and physiological), economics, sociology, psychology, the humanities, and languages. These last she will study for her soul's sake, and they will provide an insulation which will protect her somewhat from the stifling results of routine. In food study, her preparation will include the economics of food, and she will have practice and actual work with real responsibility for the food of large groups, such as school cafeterias or camps; in dietetics, she will learn to plan, calculate and prepare diets for actual people, basing her work on a thorough familiarity with all that will have been learned by that time about digestion, metabolism, and excretion, and she will learn intelligently to observe the effects of these diets.

Her training will not be an apprenticeship. Most professions have abandoned this plan of training; nurses are struggling to get away from it; we are in danger of retrogression into it. Partly for the warning for ourselves which we can find in it, every dietitian should read that excellent report of committees from nursing associations which recently surveyed the nurses' training schools under the Rockefeller Foundation. In the future, the dietitian will get her training in an organization complete enough to be able to run without her; she will be there primarily for her training; she will make a contribution toward the routine work, but as an essential part of that training, and it will be understood that her presence, like that of the medical students, necessitates a contribution from the institution. From one point of view, all students, medical, dietary, and the rest, are in the way in a hospital, but they are endured, taught, and helped for the sake of the cause for which the institution stands. The student dietitian's contribution to the routine should allow progress, not mere existence within the routine. In the future, the dietitian will want, even demand, not minimum training, but maximum, and optimum, training. She will not expect that with a three months' course she can be fitted to manage the dietary department, including administration, special diets, and allied departments, in even a small hospital. She will recognize the fact that the field is enormous and tremendously diversified; that there are very few women who can successfully do it all, or even in any detailed sense, direct it all; she will realize that her training must give her a general knowledge of all parts of the field, and must give her as well a somewhat extended intensive training, with real responsibility, on one part of it; or, she will prepare to do

just one thing, frankly specialize, and not attempt to enter other parts of the field.

If the dietitian specializes with the idea of becoming an analyst in a chemical or research laboratory, or in a metabolism ward, an office dietitian to a group of physicians, or a consultant with her own office, a dispensary dietitian, a a dietitian doing special case work, or a nutrition specialist in a health center, she may be able to succeed on a deep, intensive, long, but somewhat narrow technical training, but in every other part of the work, perhaps in some of these, she will need first of all to have administrative training and experience. Administrative power may play the part of opening wedge, or card of admission, of foundation for building, but it is much more than this. The dietitian of the future who will frankly prepare herself for administration, and stick to it, will have unlimited opportunity for the highest service, for lifting the whole profession to a higher level. She has a chance of doing research of the first rank. The future dietitian, then, will take time in her training for adequate study and practice in administration, which will include equipment, organization, and management of kitchens, dining rooms, and cafeterias; psychology and general management of employees, means of developing morale and stability; wages, records, care of equipment and supplies, preparation and distribution of food on a large scale, work on the wards, the planning and making of menus, modification of general diets for children and adults in health, bed and ambulatory patients, diets for maintenance, for recuperative and maternity cases, and the factors involved in cost. She will do it because she has chosen administrative work as her field, or because she wishes to use her knowledge of it as a foundation or as a card of admission. In some institutions the training can include institutional housekeeping, in some buying, in many the teaching of nurses; in all it should include study of the relation of the dietitian to all other departments, although institutional diplomacy is, after all, mostly the same old application of self-control, generosity, consideration, sympathy, and attempted understanding to other people's problems which make people live happily together anywhere.

Without complications in the way of special diet work the milk-room, the dispensary, laboratory, metabolism ward, or other special work, the pupil stage of training in hospital administration can hardly be covered in less than three months, certainly not in less than two, and if the dietitian is to go out as anything more than an untried beginner, she needs two months' experience as assistant, with constantly increasing responsibility, and one month with responsibility as full as she is capable of carrying, perhaps serving as relief, either during the vacation of the dietitian, or while she is absent on other work. In the future, the pupil dietitian will not think that this means that the institution is simply making use of her for its own ends, she will regard it as young doctors and surgeons regard a chance to jump ahead for a little time into the place of a superior, as a very useful opportunity. She will know that she is not

really taking the place of the dietitian, but merely pushing along, perhaps to a slight extent guiding a machine already set going, and that she is getting valuable experience. She will realize that only years of experience and of life will make her an administrator, and that during these years she should not put overmuch emphasis upon salary, hours of work or rank, but will focus her attention on opportunity. The responsible people in the field must look after these things for her.

Five or six months, then, may be called the minimum time for training for administration and a good administrator can hardly be trained in less. Instead, good training in so short a time can be given only if the candidate is unusually gifted for the work, or has had some sort of administrative experience, or, at least life experience. For several years after her training course, the young woman will choose assistantships in large institutions, several of them, one after another. Since all hospitals and other institutions need administrators, and many demand nothing more, most training courses will stress this frankly and attempt little else.

After twelve weeks of administrative work, the student in a large and diversified institution may go next into the children's and babies' wards for six weeks' study of milk-room methods, children's diets, and the methods of handling children, perhaps helping with classes for undernourished children, especially in the orthopedic wards, where patients often stay for some time, and from which they need to be sent home better informed about the food they need than most children are.

Next, she may go to the clinical laboratory for six weeks' study in laboratory tests and methods and work in the metabolism ward. Here she will study gastric, fecal, blood, and urine analysis, she will run nitrogen balance experiments, determine basal metabolism rate from gas analysis, and make complete studies of patients by conferences and a seminar on metabolism and dietotherapy, and by attendance at clinics.

Next may come six weeks in the diet kitchens, in which, after a short time spent in getting acquainted with the general organization of the work, all available groups of diets will be studied, the planning and calculation of them will be supervised, and the patients will be interviewed, by the student. On rounds with dietitians and doctors, she will also observe the effects of the diets.

Twelve weeks may be spent on pupil work in administration, followed by 12 weeks' assistantship; this will form a minimum course. A fuller course, lasting from 7 to 9 months, may devote 6 weeks to work in a children's hospital or 6 weeks in the clinical laboratory and metabolism ward, or 6 weeks in the diet kitchen after finishing the work in administration. If a year is to be given to the training, all of these can be included. Attendance at clinics and lectures by medical specialists and other scientists will make the work more valuable.

In a university hospital, or hospital affiliated with a university or college, three months additional time may be devoted to graduate study in nutrition or economics and administration. In such an institution, the training of the future dietitian will be an interneship, and may proceed in this wise:

12 weeks' pupil work in administration
6 weeks' in children's and infants' wards
6 weeks' in clinical laboratory and metabolism ward with graduate credit
6 weeks in the diet kitchen
10 weeks in special problems in nutrition or administration with graduate credit
12 weeks assistantship in some one phase of the work and relief service in administration, diet kitchen, or children's wards
A seminar, 1 hour a week, will continue through the whole year and give graduate credit.

The last three months will be spent in the phase of the work in which the student has shown most aptitude, administration, children's diets, infant feeding, corrective diets for adults, or research. If in research, a master's thesis may be worked out, and a master's degree attained; if practical hospital work is successfully done, the university will bestow a certificate of proficiency signed by the superintendent, and the president and the dean of the medical college, which will give to officers of other institutions evidence of superior work on the part of the candidate. This course will be most useful as a graduate course for dietitians of some experience in one part of the work or another, who want to broaden their field, or who want opportunity to study special problems.

Following training, the dietitian, no matter how extensive her training may have been, will not expect or even desire, to leap into a position as dietitian in chief, unless she has taken the course after considerable experience and has exceptional educational foundation and excellent inheritance in the way of health, poise, and diplomatic gifts. She will expect a novitiate of some length, but eventually she will be one of a group of specialists, mutually respecting one another's fields and among them they will work out a system suited to the institution. There will be an administrative head among them, who will cast the deciding vote in disputed matters, but she will be the chairman of the group rather than a chief expected to know more than anyone else about ministration, and metabolic diets, child feeding, milk room methods, and scientific investigation. The chairman may specialize in any of these fields; it does not greatly matter if she is the right sort of person. She will command respect in her own line, she will delegate authority in properly graduated measure to other members of the group, and will then respect that authority. She will maintain proper relations with other departments, and will not only further active cooperation with them all, but will coöperate in the perhaps more difficult way described thus by a wise Ohioan, "To coöperate is to conduct yourself in such a way that other people can work with you."

EDITORIAL

Vocational Education Council. At the recent Detroit meeting of the American Home Economics Association action was taken which is of interest to all members of the association and particularly to those engaged in home economics education. The Council and Executive Committee of the American Home Economics Association agreed to appoint five members to a "council" which will include also five members from certain of the other associations meeting jointly in Detroit, this "council" to work out a plan for the more effective coöperation of associations interested in vocational education and also for their relation with the National Education Association. The other organizations which voted to support the plan were the National Society for Vocational Education and the Vocational Education Association of the Middle West. The National Vocational Guidance Association did not support it. The Eastern Arts Association which was only informally represented at the conference will take up the question at its next meeting.

There thus is formed in a tentative, experimental way a sort of loose affiliation of several associations interested in vocational education. The American Home Economics Association through its group on the council should be able to do much for the furtherance of home economics in school systems. The promise for the future as seen in this plan is very satisfactory.

It is hardly necessary to say that the many other interests of the American Home Economics Association are in no way involved in this action.

The representatives of our association will be announced in the next number of the JOURNAL.

The Executive Secretary Fund. We knew that we needed an Executive Secretary—and how much we appreciate her, now that we have her! Surely we are all convinced that our Association cannot develop as it should without having the services of a paid worker. We shall have to raise a special fund for one more year, and then, if we all use our wits in attaching to the Association all the people who ought to belong, we may be able to manage without a special fund.

Have you made *your* contribution for this year? Miss Matthews will appreciate it if money which has been pledged can be sent directly to her or to your state chairman without any reminder from her. (The Association does not provide her with secretarial assistance.)

Have you made your contribution for next year? The executive Committee was authorized at the Detroit meeting to make an appointment for next year. Any one who promises to serve is entitled to the assurance that comes from knowing that funds are actually in the treasurer's hands.

Have you considered carefully whether you know someone outside of our professional group who is sufficiently interested in our aims to be willing to contribute $100 for next year? (Contributing membership.)

Are you thinking ahead to 1924? It is important not to rely on a special fund a day longer than is necessary. We can support an Executive Secretary by membership fees—even a dollar fee—if we have enough members. How large a membership can we have by the annual meeting in 1924?

ALICE F. BLOOD,
President.

Public Coöperation for Better Films. The Motion Picture Producers and Distributors of America, under the direction of Will H. Hays, are making an attempt to improve films and to meet the best public sentiment as to the responsibility of the movies, through a Committee on Public Relations. This committee is composed of representatives of more than eighty organizations, of which the American Home Economics Association is one. An Executive Committee and an Executive Secretary complete the organization under this new plan for public coöperation. The purpose of the work of these several agencies includes:

a. The establishment of a channel of inter-communication between the agencies instrumental in forming and interpreting public opinion and the motion picture industry.

b. The increased use of motion pictures as a force for citizenship and a factor in social benefit.

c. The development of more intelligent co-operation between the public and the motion picture industry.

d. The aiding of the co-operative movement instituted between the National Education Association and the motion picture producers to direct the making of pedagogic films and their effective employment in the schools.

e. The encouragement of the effort to advance the usefulness of motion pictures as an instrument of international amity, by correctly portraying American life, ideals, and opportunities in pictures sent abroad and the proper portrayal of foreign scenes and persons in all productions.

f. The furtherance, in general, of all constructive methods of bringing about a sympathetic interest in attaining and maintaining high standards of art, entertainment, education, and morals in motion pictures.

The Division of Simplified Practice. When the committee of leading industrial engineers, acting under Secretary Hoover's direction, made their survey of waste in industry, they found in six major industries an average waste of forty per cent for which there was no definite or tangible return. Their suggestions for corrective action have thus far reached only a small portion of the public, and yet they are well worth the earnest consideration of every consumer who feels that the steadily rising cost of living is a personal problem.

Study by consumers of the elements or factors in current production and distribution costs will show wherein the present wastes can be largely reduced through constructive coöperative effort with the manufacturers and distributors of the product considered.

One fertile field for such effort is in the elimination of excessive variety in size, dimension, style, or model of commonly used articles. Secretary Hoover says: "It is certain there are a great many articles of every day use in which the manufacturer would indeed be glad to undertake some coöperation in simplification from which the saving in national effort would be interpreted not into *millions* but into *billions* of dollars. This does not mean we stamp the individuality out of manufacture, invention, or decoration. It means basic sizes to common every day things."

Frequently a manufacturer, or group of manufacturers, would like to eliminate excess varieties, but feels that the producers cannot properly approach either the distributors or the users of these articles with such a proposal. In other lines it is the distributors who would like to bring about reduction of variety if they could get manufacturers and consumers to agree. In some lines the consumer would be particularly glad to have his views considered by both producer and distributor, for the user bears the brunt of all current wasteful practices in production and distribution of commodities.

If the consumer wants a lower cost of living he can get it. One of his strongest allies in gaining that objective is the principle of simplification. Leading men in widely different fields agree that the elimination of odd sizes and superfluous varieties enables them to decrease stocks, reduce investment, lower production costs, lower selling and distributing cost, and stabilize production. At the same time simplification works to quicken turnover, improve quality of product, give more prompt delivery, increase volume of sales, and stabilize employment. The consumer gains these advantages: lower purchase prices, improved quality or value, better service, and lower cost of living.

Secretary Hoover has established the Division of Simplified Practice in the Department of Commerce to serve as a centralizing agency in bringing producers, distributors, and consumers together, and to support the recommendations of those interests when they shall mutually agree upon simplifications of benefit to all concerned.

OPEN FORUM

Are We Justified in Teaching Clothing Construction? In the spring of 1922 a committee in one of Dr. Benjamin R. Andrews' classes at Teachers College, Columbia University, decided that it would be worth while to carry out an investigation regarding "clothing habits." As a means of doing this a printed double post card was sent to 200 married graduates of college home economics courses. The card was as follows:

Through the courtesy of your college or university department of home economics, we are sending you this questionnaire because we feel that, as a homemaker, with training in home economics, your experience will be valuable in showing what the courses in home economics in our schools and colleges should be teaching.

Will you please fill out the attached card and return it, unsigned, to the Household Economics Department, Teachers College, Columbia University, New York City, at your earliest convenience.

Occupation of husband.....Children's ages.....
Income level: $1–2000; $2–3000; $3–5000; $5–10,000; over $10,000 (underline)
What garments of your own do you generally 1. make yourself.....
2. hire made..... 3. buy ready-made.....
What garments of your husband's do you generally 1. make yourself.....
2. hire made..... 3. buy ready-made.....
What children's garments do you generally 1. make yourself.....
2. hire made..... 3. buy ready-make.....
Do you sew because you 1. enjoy it.....; 2. find it a decided economy.....;
3. are thus able to get clothes that suit you better.....; 4. other reasons.....
Do you buy clothes ready-made because of 1. greater satisfaction derived from ready-made garments.....; 2. decreased trouble in procuring them.....;
3. economy.....; 4. other reasons.....

This method was chosen because it was felt that a brief and concise questionnaire, which was already addressed and stamped, would bring more replies than would one of greater length; also, that a higher percentage of returns would be more significant than would few replies, covering a large number of points. One eastern college was selected, one from the far west, and three from various sections of the middle west; the replies came back from eighteen states. We recognized the disadvantages of using such a highly selected group but felt that this

would be more than counter-balanced by the fact that it was a group that had had, supposedly, similar training in clothing work.

Approximately one-third of the cards were filled out and returned. Income levels ranging from $1000 to over $10,000 were represented. Twenty-five per cent had incomes of $2000 or less, all of them being the families of either teachers or farmers; 32 per cent had incomes of from $2000 to $3000; 24 per cent of from $3000 to $5000; 11 per cent of from $5000 to $10,000; and 8 per cent of over $10,000.

Eighty-two per cent of these families had children, Of this group 24 per cent had but one child, forty-six per cent had two children, 20 per cent had three, and 10 per cent had four. There were no children over six years of age in 63 per cent of these families and it is reasonable to suppose that if a similar survey were made a few years hence, one would find that the number of children per family had increased. The above facts would tend to disprove the theory that women who are college graduates seldom have children.

Only one woman stated that she had any of her children's clothes made and her husband's income was over $10,000. One third of them made practically all of their children's clothes, even the knitted garments; and a large majority made most of the clothes for all of the children, except the older boys. They sewed for their children more than for themselves because "children's clothes are easier to make" and "can be made from used materials to advantage."

Information regarding the husbands' clothes indicated that 43 per cent wore pajamas or underwear made by their wives, 31 per cent wore homemade shirts, while 50 per cent purchased all of their clothes ready-made. Only 10 per cent patronized a tailor, and these with no particular relation to income.

Six per cent of these women made none of their own clothes and in each case they explained the reason. "It is easier for me to earn money to hire a dressmaker." "I have never learned to sew." "As a farmer's wife with three small children I can find no time to sew." Over three-fourths of them made their own underwear; an equal number made at least part of their dresses. Many preferred to have their best dresses made or to buy them ready-made because they had trouble in fitting themselves, because they were unable to get that "tailored look," or because they preferred to see how the finished garment looked before purchasing it. Most of them bought their suits and coats ready-made; two made all their own clothes, even to their hats, and one who professed

to make everything except suits and coats explained her reason for not making them by saying, "I never had tailoring in college."

Eighty-two per cent stated unqualifiedly that making clothes at home is an economy, and all but one of the others felt that certain garments can be made more economically than they can be purchased ready-made, although opinions as to which garments these are seem to vary with the individual. Of the few women who felt it an economy to purchase ready-to-wear garments, other than suits and coats, all had incomes of over $3,000 a year. Only 50 per cent professed to enjoy making clothing. Is this, perhaps, an indictment against our methods of teaching clothing construction work?

Satisfaction derived from ready-made suits and coats was generally expressed as well as the decreased trouble in procuring them. If one may judge from this small group the day of the hired seamstress is passing, for women seem either to make their clothes themselves or to purchase them ready-made.

The data set forth herein would seem to justify the inclusion of clothing construction work in the curriculum and to disprove the theory, so frequently advanced, that ready-to-wear garments have done away with home sewing. For some years to come the woman who knows how to sew will probably continue to make a fair proportion of the clothing for her family, realizing that by so doing she is contributing an appreciable amount toward the real income of the family.

CLARA M. BROWN,
University of Minnesota.

Institutional Servings. If a No. 10 can of peas makes 30 servings, why is it that 20 exactly similar No. 10 cans will almost invariably make more than 600 servings when dished out in the same manner?

Perhaps it is because the server, finding as she nears the bottom of the can that there will be half a serving left over if she makes 30 servings of precisely the same measure, adds a little to the last 4 or 5 when she is to serve only 1 can, since the remaining half-serving would be of no use. Whereas, when she continues serving from other cans, these half-servings are utilized, and thus (in case of 20 cans) 10 additional servings appear.

Other explanations will no doubt occur to the reader.

Score Cards for Institutions. We have received several requests for score cards for institutional use. If any institution has worked out such cards, we shall appreciate copies of them.

MABEL C. LITTLE,
Director, Halls and Commons
University of Wisconsin.

BOOKS AND LITERATURE

Personal Hygiene Applied. By JESSE FEIRING WILLIAMS. Philadelphia, W. B. Saunders, 1922, pp. 412. Price $2.50.

Among the most recent contributions indicating the modern trend in hygiene and health instruction, is this book which may serve as a text for college freshmen; as a reference for parents, nurses, or social workers; and as worth while reading for the lay person interested in "living most in order that he may serve best." Its chief value is found in its power of establishing motives for healthful living, in applying the flame of desire to the torch of knowledge. Study of structure is subordinated to consideration of function, the latter serving as the basis of foundation for health principles. Accordingly, the hygiene or health of the muscular system depends upon rational exercise which, for the normal individual, should be recreative in character. So, in line with modern educational procedure, the value of games and sports is emphasized; formal gymnastics, except for therapeutic and remedial measures are minimized. "College men and women ought to develop during school days a skill in and love for some sport, game or physical activity, which they will follow after school days are over."

Home economics teachers interested in the hygiene of clothing, should read the paragraphs on application of hygienic principle to footwear.

The chapter on the hygiene of nutrition includes the study of basal metabolism, caloric values, and classification of foods, the relation of vitamins to growth, and the value of mineral salts. The careful handling of data, and the interpretation thereof, are especially well adapted for the student with little or no previous training along this line. Home economics teachers, might, with a few modifications, use the chapter as a text for high school classes. Exception, however, may be taken to the indiscriminate use of the height and weight tables, as authorities differ as to their value when applied regardless of climate, geographical area, or nationality.

The control of environment is especially important in relation to the hygiene of the respiratory system—effect of wind, and humidity, the control of dust, dirt, and bacteria, the value of sunlight. Those who have struggled with artificial or fan ventilation systems in school rooms, will be interested in the experiments showing the high rate of respiratory diseases resulting therefrom, in comparison with other systems. Breathing exercises, as such, are discouraged on the physiological basis that "magnitude of oxidation is regulated by condition of the tissue itself, and not by the amount of oxygen actually available." Health habits related to the circulatory and excretory systems are primarily those of bathing, the care of nails, hair, and hands, the elimination of body waste, and the material and construction of clothing—a phase which should be emphasized in all dressmaking courses.

The chapter on the nervous system and the sexual aspects of life are philosophical rather than physiological, and, for that reason, will probably be more far-reaching and more effective. High mindedness and clean mindedness are attitudes induced by socialized ideals, and, in this particular phase of life, are the guiding and controlling factors. Altogether, the book is an excellent addition to university textbooks, and a real contribution in the field of health education.

MARY E. GROSS,
Director of Physical Education for Women,
University of Washington.

Positive Health Series. By The Women's Foundation for Health, Inc., 43 E. Twenty-second St., New York City, 1922. Six Pamphlets.

The keynote of the movement organized by the Women's Foundation for Health is expressed in the title of the six pamphlets, namely, "The Positive Health Series." Emphasis on the positive and constructive in health education is consistently followed throughout the proposed program for health education.

A clear cut conception of health and its attainability is presented with an explanation of the necessary health examinations interpreted with emphasis on the follow-up work and the reëxamination. Individual exercises excellently illustrated and explained are prescribed for abnormal conditions. Illustrations of faulty posture and abnormal feet are given with methods of correction.

The relation of nutrition to health is ably discussed showing the vital importance of food and diet as a health factor.

The individual must first know herself in order to determine her possibilities and how best to develop them. This inventory will include an understanding of her state of mental health and the close relationship of it to the physical state. Thus she will come to appreciate the value of mental hygiene. The importance of this factor in the bringing up of children is also forcefully presented.

One pamphlet is devoted to the physiological explanation of the reproductive system.

The foundation of a woman's health must rest on right habits and conduct and the proper adaptation to her environment. To achieve these she must know how to renew herself in body and spirit. This renewal must come through recreation, the kind of recreation which will give her a keen pleasure in life and living.

With the health examination as a basis, a logical and effective health program is presented in this Series.

The assumption that health is normal and realizable, accompanied with definite information and instructions toward the attainment of it, makes a most convincing appeal to both the layman and those who are specifically interested in health education.

LOUISE FREER,
Director, Dept. Physical Education for Women, University of Illinois.

The Principles of Interior Decoration. By BERNARD C. JAKWAY. The Macmillan Co., 1922, pp. 289. Price $2.50.

Homemakers and teachers of household arts, irrespective of financial resources, will find this book suggestive. Although the principles of art are freely presented, the author repeatedly emphasizes the uses to which the house is to be put and the personality of the occupants as of paramount importance in home furnishing.

There are sixty-six sketches and plates. The style of presentation is simple and direct. Opening the book at almost any page the average woman will unconsciously be drawn into an analysis of her own home surroundings. It undoubtedly meets the needs of high school girls and older women.

FLORENCE E. WINCHELL,
The Lincoln School of Teachers College.

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NEWS FROM THE FIELD

Summer Meeting, American Home Economics Association. Chicago is the place decided upon for the next annual meeting of the American Home Economics Association and the dates set are July 30 to August 3, 1923. This city has the marked advantage of its easy accessibility from many sections of the country, of its numerous points of interest and beauty for professional trips and for pleasure, and of its University. The program committee, with the help of representatives from the University, the public schools, women's clubs, and other institutions and organizations, is working on the plans for the meeting, and is ambitious to make this the greatest of the conventions of our rapidly growing Association.

The headquarters will be at the University, and all or most of the meetings will be held in Mandel Hall, Ida Noyes Hall, which is the beautiful woman's building, and in various class rooms and laboratories. The resources of the University will be used to a large extent, including visits to, and demonstrations of, the work of several departments.

The committee is endeavoring to secure distinguished speakers for general and section programs. Home economics women are being asked to discuss their solutions of problems common to many of us, and, where possible, their pioneering experiments. Men and women of related fields will be expected to contribute their experience and criticism.

For professional trips the members in attendance may have wide choice. Hull House, the new Field Museum, and the Art Institute, the many hospitals, clinics, and infant welfare stations are a few that should be mentioned. So, too, should the many industrial plants of interest such as the stock yards, the corn products company, and the great mail order house of Sears Roebuck with its well known textile laboratories.

Members attending the meeting may live at hotels on the south side in the neighborhood of the University. One hotel, the Windermere is building a large annex which will be ready in the spring and which will probably serve as the chief living place for out-of-town members.

Between the meetings guests may enjoy a swim in the Lake, walks in the near-by parks, or drives through the famous boulevards. Even a trip to the beautiful Indiana Dunes may be attempted by the more ambitious.

A preliminary program of the meetings will be published shortly in the JOURNAL. Katharine Blunt is chairman of the Program Committee.

The Mid-year Meeting of the American Home Economics Association. The first day's program was devoted to Child Care and Training, emphasizing the work of the Merrill-Palmer School. Dr. Wooley spoke informally upon the organization and purpose of the Merrill-Palmer School. Miss Skinner told of the nutrition work and general health supervision done in connection with the children of the nursery school. Elizabeth Cleveland spoke on the coöperation which Miss White had secured with the various educational departments in Detroit, the observation classes which were sent from the Detroit Teacher Training School to the Merrill-Palmer School, and the benefits derived therefrom.

The second day was devoted largely to business and problems of the Association and its relation to other organizations. A fuller report will appear in the March JOURNAL.

National Consumers League. Anna R. Van Meter and Mary L. Lindsley represented the American Home Economics Association at the meeting of the National Consumers League in Washington, November 9–10, 1922. The Thursday afternoon meeting was a Work Conference dealing in the main with the discussion of the Minimum Wage Law, its effects and possibilities of enforcement, and with the activities of the Minimum Wage Boards.

The session of Thursday evening consisted of a symposium of opinions from representatives of various organizations upon the constitutional amendment proposed by the National Woman's Party looking to the removal of all social, political, and legal differences between the sexes.

The same note of opposition to this so called "blanket legislation" dominated both the morning and afternoon sessions on Friday. The Federal Child Labor Amendment was the topic Friday evening.

Standard Building Code. The shortage of some 1,000,000 dwellings as a result of suspended construction during the war led to widespread demand for Federal legislation and assistance. Under an appropriation from Congress an investigation of the situation and possible remedies was made by the Department of Commerce. During the process of the inquiry numerous conferences were held with the various branches of the building industry and with representatives of municipal and civic bodies. It appeared that the retardation was due to (a) the acute credit situation; (b) high prices of material and labor; (c) unsavory business ethics in certain localities; (d) wasteful practices in their contribution to costs.

It was concluded that the first two causes would in the main cure themselves by the general fall in prices then in progress. The third could only be cured by vigorous action of the Federal and State authorities, a large measure of which has been accomplished.

Systematic measures of coöperation were set in motion in trade and civic bodies for the eliminating of waste in various directions, and thus a reduction of construction costs. A tentative draft of a standard building code was submitted to some 975 engineers, architects, municipal officials, and representatives of the building industry, whose useful criticisms were incorporated in the final draft. The code is already being adopted in some municipalities. Work in elimination of waste, in advancing voluntary standardization and inspection of qualities and grades, in elimination of unnecessary variation of dimensions of building material, and in the simplification of specifications has been undertaken by experts from the Department at the request of and acting in coöperation with building material, contractors', and consumers' associations, with gratifying results.

ARIZONA

The State Department of Vocational Education issues a monthly news letter containing suggestions for vocational teachers of home economics and reports of work carried on by these teachers. It is the means of stimulating interest and coöperation.

The Home Economics Club of the University of Arizona gave a tea, December 14, 1922, to all students registered in any of the home economics courses. The junior class in foods and cookery planned and prepared the refreshments.

ILLINOIS

The Committee on Household Activities of the Illinois Home Economics Association is preparing to continue its work of last year by distributing to the housewives of the state a comprehensive questionnaire to obtain sufficient data to approximate standards of housework. Several agencies throughout the state are giving their support to the project.

INDIANA

A Project in Nutrition. In an elementary school, which is located in a poor district in Indianapolis, there are two "open window" rooms for markedly underweight children selected from tubercular families or showing a tubercular tendency in themselves.

Up to the middle of last year, the hot lunch that was served to the children in the middle of the morning was prepared by the children themselves, under the direction of the teacher. This entailed extra work for the teacher and a loss of time and strength by the pupils that should have been expended on their school work.

The Marion County Tuberculosis Society volunteered to furnish a cook for these children, and a room adjacent to the home economics kitchen in another building on the school lot was used for this purpose. But as the cook did not come for some time, the home economics classes, under the direction of Mary E. Commack, came to the rescue.

They had been taught about foods suitable for underweight children; about what the hot lunch at school was doing for our children; and about the problem that the teachers of the Fresh Air schools were facing until the cook arrived; then the children said, "Why can't we prepare the foods for them, until the cook comes?" The teachers and the principal of the building coöperated in every way, and for a number

of weeks the different morning classes prepared and served the food to these children. The work proved so interesting that even after the cook arrived some class prepared this meal at least once a week for the rest of the school year.

At the end of the year the final report for the Fresh Air School showed that all these children, about sixty in number, had gained with but one exception. The average gain for the school for the year was 6.47 pounds. Even though the home economics classes were only helpers in this project, they had a feeling of proprietorship and confidence. Their interest never flagged; they willingly assumed this work, giving up their recess in order to serve these children, and washing the dishes cheerfully. They actually learned more about the relation of food to health than they would have learned in a much longer time of ordinary cooking period.

Purdue University. The senior students in lunch room management were recently given an opportunity to gain a slight appreciation of commercial tea room work, at the Christmas bazaar held by the Association of University Women. Lafayette has an attractive community house which is the center of many activities. The bazaar was held here and the large dining room was decorated to resemble a tea room. The members of the class did the planning, marketing, food preparation, and serving.

IOWA

Iowa State College. The Home Economics Club has a worth while reason for existence. Its plan is to keep in touch with new developments in the field of home economics and to gain a more extensive knowledge of home economics problems. This year it is concentrating its efforts towards the firm establishment of a memorial scholarship fund in honor of Dean Catherine J. MacKay. Last year the Club contributed one thousand dollars to form the nucleus of this fund.

Dr. Margaret Nordfeldt, who represents the National Board of the Young Women's Christian Association of New York City as a lecturer on their program for positive health, is investigating several problems for them in large and small colleges, and organizing health programs. She has met all the Iowa State College women either in their class rooms or in the dormitories and houses. Dr. Nordfeldt finds here both a workable and a working plan, which has been in operation for a year, and has accomplished some unusual results through the coördinated efforts of the Departments of Hygiene, Physical Education, and Nutrition.

J. T. Barklow, M.D., who has done graduate work in public health, is state director of the Bureau of Restaurant and Hotel Inspection. Dr. Barklow welcomed the opportunity to meet the institutional class from the College. He explained the laws in regard to restaurant and hotel inspection, and the details of the inspection as carried out under his supervision. He took the class to a restaurant kitchen having high standards. He also took them to a typical under-ground restaurant kitchen where the owner explained the improvements he is planning in order to get a permanent license.

On this trip to Des Moines the class visited a number of public kitchens, commercial tea rooms, cafeterias, restaurants, hotels, hospitals, and industrial plants.

Mary E. Sweeny, Executive Secretary of the American Home Economics Association, spoke at a faculty dinner. She made many suggestions as to plans for state work.

Penn College. An unattractive rest room is the problem in several home economics classes this year. The girls in the course in house planning are furnishing ideas for the change of this room; those in house management are planning the repainting of the old furniture; the beginning sewing students are making draperies. Girls in foods classes are doing their share by selling food to swell our fund, when the lesson permits. We hope to have an attractive rest room when each class has accomplished its work.

The Home Economics Department of Penn College is coöperating with the American Red Cross and the local Farm Bureau. We have a give and receive relationship with both organizations.

KANSAS

The Kansas Home Economics Association has completed its organization. Elizabeth C. Sprague, University of Kansas, is president and Mabel Senter, Fort Hays Normal, is secretary-treasurer.

Kansas State Agricultural College. Dean Helen B. Thompson of the Division of Home Economics, has been appointed by the Bureau of Education at Washington to to assist with an educational survey in the state of Massachusetts. She is in charge of the investigation of facilities and opportunities for higher education of women.

The Kansas Association of Deans of Women and Advisors of Girls held its eighth meeting at the Kansas State Agricultural College, December 7, 1922. Many of the discussions were of particular interest to home economics women. Dean Helen Thompson spoke on methods of promoting ideals of scholarship, and Dean Grace Wilkie, of Fairmount College, on regulation of extra curricular activities.

Housing of students was discussed by Dean Caroline Matson, Kansas Wesleyan University, who emphasized the college dormitory problems. Dean Anne Dudley Blitz, Kansas State University, outlined the control and management of coöperative houses and sorority houses. The supervision and inspection of the rooming houses for students was the subject of talk by Dean Mary N. Kerr, Kansas State Normal School.

Topics for discussion were the problems of the girl working her way through college, the entertainment of large groups of students, social conventions for students, and college fraternities.

MARYLAND

The fall meeting of the **Maryland Home Economics Association** was held on December first at the Western High School, Baltimore, the president, Frances Zuill, presiding.

The morning session was devoted to business matters, including the election of officers. Frances Zuill was re-elected president; Katherine Braithwaite was elected vice-president; Marie Mount, secretary; Lulu Biddison, treasurer; Venia M. Kellar, alternate councilor; Ethel Dix and Mabel Stephenson, members of the executive committee.

The State Association, already affiliated with the American Home Economics Association, will renew its membership with one hundred and three paid members.

Following a luncheon, arranged by a Baltimore committee, Wilhelmina Spohr, Assistant Professor in Household Arts Education, Teachers' College, Columbia University, spoke on the relation of home economics in the school to the community. Laura I. Baldt, of the Department of Textiles and Clothing, Teachers' College, gave a talk on new aspects of teaching clothing, stressing selection rather than construction of clothing. Mr. C. W. Pugsley, Assistant Secretary of Agriculture, Washington, D. C., explained the plans of the department of agriculture for a bureau of home economics in the department.

MICHIGAN

Home Economics Club. The purpose of the Home Economics Club of the Michigan State Normal College, Ypsilanti, is to promote professional interest and good fellowship. Dinner meetings are held once a month at which time prominent speakers address the group.

A social service project worked out this year was the making of thirty night gowns which will be Christmas gifts for the children in needy homes of Ypsilanti. Besides these garments gifts for the children's Hospital in Ann Arbor were brought to the annual Christmas banquet.

The Club is composed of the students majoring in home economics and the faculty of the department. There are sixty-nine members. The faculty members of the club are S. Deborah Haines, new head of the department; Faith E. Kiddoo, Sarah T. Murray, and Florence E. Lytle. The city high school home economics teachers, Jessie Swaine and Caroline S. Lewis, are honorary members. The officers of the club are: Katherine Freund, President, Phyllis Clifford, Vice-President, Donalda Morrison, Secretary, Marie De Prey, Treasurer.

MISSOURI

Missouri Home Economics Association. The Missouri home economics teachers met in Kansas City as a section of the Missouri State Teachers Association. The outstanding piece of work accomplished at that meeting was the reorganization of the body into the Missouri Home Economics Association, affiliated with the American Home Economics Association. Essie Heyle of the Extension Department of the state spoke of the wisdom and advantages of affiliation. The constitution and by-laws were amended to meet the requirements of affiliation.

Speakers on the program were Mary Sweeny, executive-secretary, A. H. E. A.; Virginia Bauer of the University of Missouri, Mrs. Katharine Still of Kirksville Teachers College, and Frances Creamer of Converse, who spoke on different aspects of the nutrition problem of the school child; Clare White, director of vocational home economics, discussed the results of the vocational high school girls' contests in home economics held recently at Columbia; Julia Hatz of the Teachers College at Warrensburg, talked on the teaching of textiles in high school; Rolena Phelps, of Joplin, gave her impressions of the meetings at Corvallis.

A pleasing bit of instructive entertainment was afforded by a group of girls from Central High School of Kansas City who demonstrated effects of different lines and colors in dress on their classmates as models. The Kansas City Home Economics Club welcomed the visiting teachers at tea.

The next annual meeting will be held at Columbia in May. Hitherto only home economics teachers have been interested in the program; it is the aim of the association that all home economics trained women active in any capacity will find help and fellowship in one or another of the sectional meetings that are being planned for the Columbia event.

The officers of the past year, re-elected to serve until the meeting in May, are as follows: President, Ella Groenewold, Teachers College, Warrensburg; Vice-President, Flora Henke, Patrick Henry School, St. Louis; Secretary-treasurer, Clare E. White, Director of Vocational Home Economics, Jefferson City.

MONTANA

The Montana Home Economics Association held its third annual meeting in Helena Nov. 27–29, 1922, at the time of the State Educational Meeting.

The program of the Teachers' Section was largely devoted to the aims and benefits of organized nutrition work. A demonstration class was conducted by the local home demonstration agent, Mrs. Bess Snyder Sparrow. Dean Sarah Louise Arnold of Boston gave an inspirational talk on the development of Home Economics.

The following addresses completed the general program of the annual meeting: Aims and Accomplishments of Girls Club Work, Emily Linhoff, Assistant State Boys and Girls Club Leader; The Smith-Hughes Home Economics Program, Edith Franks, State Supervisor of Home Economics; The Legislative Council of Montana Women, Mrs. E. S. Thomas, Helena, Mont.; Coöperation with Other Organizations, Mrs. Quincy Scott, State President Parent Teachers Assn. This was followed by a luncheon with a talk on "Opportunities in the Business World for Home Economics Women" by Gudrun Carlson, Home Economics Specialist, Institute of American Meat Packers, Chicago.

The Association voted to become one of ten organizations forming the Legislative Council of Montana Women, the purpose of which is similar to the Womens Joint Congressional Committee. It was reported that the association had contributed $100 to the Executive Secretary Fund, and it was voted to set $100 as Montana's goal for that purpose for 1923. A definite program of work was adopted, outlining a state wide effort to promote organized nutrition work.

Anna M. Turley, State Home Demonstration Leader, was elected president to succeed Gladys Branegan.

A meeting of the Council of the Montana Home Economics Association was called for the second week in January when Miss Sweeney could meet with them.

Montana State College. Anna M. Turley, State Home Demonstration Agent for Montana, attended the meeting of the Land Grant College Association in Washington D. C.

Alice Metcalf, B. S., University of California and M. A. Teachers College, and Agnes Hutchison, B. S. North Dakota State College with work at Teachers College, Wisconsin and Minnesota, have been added to the home economics staff.

Of the twenty young women graduated from the Home Economics Department last year two were married and eighteen were placed in good positions.

NEBRASKA

District Chairmen. The first of a series of News and Inspiration Letters has been sent out by Margaret Fedde, President of the Nebraska Home Economics Association, to the teachers in the state. The letter lists the chairmen of the home economics sections of the six educational districts in the state as follows:

District 1, Mrs. Florence Fuller, University Place High School; District 2, Lois Whitlock, Schuyler High School; District 3, Alma Winter, Lyons High School; District 4, Mrs. Edith Meierhoff, Stapleton High School; District 5, Helen Wahl, McCook High School; District 6, Mrs. Merle Byers, Bayard High School.

The Annual Meeting of the State Teachers Association was held in Omaha, Jan. 18–20. The State Home Economics Association held its meeting at the same time.

Meeting the Mothers. Two high school teachers in the state have been trying to make closer contact between the home and the school. One writes "Last year our girls invited all mothers to an "At Home" one afternoon every month. The mothers brought their sewing and the girls brought mending from home. The afternoon was spent pleasantly in working together and talking over common problems. The girls served simple refreshments during the latter part of the afternoon. The mothers felt that this meeting resulted in their knowing what the teacher was trying to do; through discussion with the teacher, they together determined the needs of their girls; they formed an acquaintance with other mothers."

Another writes "We are planning to have a girls' night when each girl will bring her mother. The girls of the different classes will have all kinds of contests. We need some way in which to get acquainted with the mothers."

Textile Exhibit. Through the efforts of Grace Margaret Morton, Head of the Textiles and Clothing Division of the Home Economics Department of the University of Nebraska, an unusual exhibit was held during two weeks of November. The exhibit was entitled "Thirty Nine Centuries of Cotton Development." It was procured from Woman's Wear Magazine and assembled in coöperation with the Brooklyn Museum and the American Museum of Natural History. It consisted of about two hundred pieces of priceless value including articles from India, South Sea Islands, Egypt, Persia, Russia, Japan, and other countries. Its batik work, tied and dyed patterns, and old designs and weaves furnished inspiration to the girls in the Art, Related Art, and Clothing Departments of the University. It was visited by hundreds of people including students, artists, retailers, and the general public. This is the first time an exhibit of this character has been sent out and Nebraska feels it a distinct privilege to be among the first institutions to receive this remarkable collection.

Representatives from Nebraska at the Midwinter Meeting of the American Home Economics Association at Detroit were Birdie Vorhies, State Supervisor of Vocational Home Economics and the Day Schools; Rose Shonka, Supervisor of Home Economics in the Lincoln City Schools; Margaret Fedde, Head of the Home Economics Department, and Beulah Coon and Lila Welch of the Vocational Education Department of the University.

NEW MEXICO

Federal Agent for Home Economics Visits New Mexico. Mabel V. Campbell, Federal Agent for Home Economics in the western region, spent the first week of November in New Mexico. She visited the teacher-training work at State College, the day school work in the Otero County High School at Alamogordo, and the state vocational office. Both Miss Campbell and the state supervisor regret that they could not visit more of the departments but the scarcity of time and New Mexican distances rendered this impossible.

Miss Campbell succeeds Genevieve Fisher, and comes to the Federal Board from the University of Kentucky, where she was head of the Home Economics Department. She was previously State Supervisor of Home Economics in Colorado.

Home Economics in Alamogordo. Ninety out of every one hundred girls marry eventually, and the other ten will find valuable use for a working knowledge of home economics. A number are choosing marriage directly upon the completion of their high school work. Ruth Morgan who has taught vocational home economics in Alamogordo for three years, states that out of her classes, sixteen are already married. Miss Morgon has developed an outstanding piece of work in home economics. She was a pioneer in the state in vocational work. Hired on the twelve months' basis, she devoted the summer months to organization and supervision of home project work, which met with excellent results.

NEW YORK

The Home Economics Association of Greater New York held its December meeting at the National Headquarters of the Y. W. C. A., New York City, on Tuesday evening December the fifth.

A comprehensive program on International Household Arts had been arranged by Emma Gunther of Teachers College who presided. Many of the countries of Europe and the near and far East were represented.

The following program was given: Child Health Education in Belgium, Fernande Spanoghe, Brussels; Housekeeping Schools in Holland, Marie Hartong, Rotterdam; Forward-Look for Women in India, Kathleen Brockway, Madras, India; Folk Songs of Czechoslovakia, Anicka Nemeth, Czechoslovakia; Homemaking in the Andes, Hortensia Balarezo, Ecuador; Household Arts in Universities in New Zealand, Winifred Valentine, New Plymouth, New Zealand; Progress in Scandinavia, Stael von Holstein, Stockholm; Home Conditions in Asia Minor, Rebecca Parker, Harpoot; Economics of Homemaking in the Transvaal, Irene Malherbe, Johannesburg, South Africa. Representatives from Siam, Denmark, Japan, Russia, China, Manila, and others took part in the discussion.

In view of the fact that various International Foundations and Associations are rapidly being developed in this country the message which the speakers brought concerning the living conditions in their countries was particularly interesting to those doing home economics work.

The scope of the various international organizations is:

"To create and maintain between the United States and other countries an international friendship based upon mutual understanding of their national ideals and aspirations, and of the contributions of each to progress in science, art, and literature."

The New York State Home Economics Association held its annual meeting in Syracuse, Nov. 27–28, 1922, at the time of the State Teachers Association meeting. The attendance was large and the program was so arranged as to interest teachers in elementary and secondary schools and in colleges and normal schools.

The Syracuse Home Bureau entertained the Association at tea at the Thrift Kitchen, and the Syracuse Home Economics Association served tea at the close of the last meeting.

The program follows: The New Demands in Homemaking, Bess Rowe, *The Farmers Wife;* Present Day Opportunities in Institutional Work, Mary DeGarmo Bryan, *Journal of Home Economics;* The Significance of Home Economics in the Economic and

Industrial Field, John Sherley, Eastern States Improvement League; Developing the Courses of Study on the Basis of the New Demands of Homemaking, Edith A. Sarver, Schenectady Public Schools; High School Clothing Courses, Henrietta Langner, Hutchinson High School, Buffalo; Discussion, by Edith Sarver; Homemaking in Relation to the Continuation School Program, Susie Rees; Our Relationship to the National Association, Mary Sweeny; The Home Economics Messenger, Marie Sellers, *Pictorial Review;* Our Journal, Mary de Garmo Bryan.

The New officers are Edith Sarver, president; Henrietta Langnor, secretary; Grace Gillett, councilor; Edith Barber, alternate.

The New York Nutrition Council held a joint meeting with the Monday Club, an organization of those interested in social work in New York City, November 27, 1922. The advance notices stated that the Nutrition Council is interested in those who eat badly because they know no better and that the Monday Club is concerned with those who ought to know, but may not, and those who do not practice what they ought to know. On this basis the program was built.

The Nutrition Council chose as its subject "Good Nutrition for our Future Citizens." Students from one of the Public Schools gave Mother Goose rhymes and short talks on nutrition. Mr. Frank Persons, formerly Director, Charity Organization of New York, told of the importance of nutrition work in connection with all social work, and the malnutrition problems met by his organization. The health movie "The Knowing Gnome" which was produced for the Red Cross was shown.

Then the Monday Club took over the program. Social workers "who are learning" gave an original health alphabet, and even though the audience could not see the health connection they enjoyed it. "How to eat in Cafeterias—and Live, by one who still lives" was as amusing as the preceding "stunt."

The Clinical Demonstration of the Awfulness of Tea and Coffee was skillfully presented with sleight of hand tricks quite out of the ordinary in medical circles. Mr. Rhautzon deserves much of the credit for the original and entertaining performance of the Monday Club.

The Nutrition Council held a meeting in coöperation with the Public Health Education Committee of the Medical Society of the County of New York, December 11, 1922. Dr. William St. Lawrence, Associate in Diseases of Children of the College of Physicians and Surgeons spoke on "Exercise in Normal and Abnormal Children." Harriet Wilde told of the importance of good posture for children.

NEW ENGLAND

New England Home Economics Association. On November 18, 1922 the New England H. E. Association gave a reception in honor of Dr. Alice Blood, a member of the association, and president of the American Home Economics Association.

The December meeting was held at Providence, R. I. After a luncheon, L. Ray Balderston, of Teachers College, Columbia University, talked on "Home Economics in China."

The Institution Section met in Boston, Dec. 7, and the Homemakers Section Dec. 16.

OHIO

University of Cincinnati. Florence Otis, is head of the newly formed Department of Nutrition in the University of Cincinnati. In line with the policy of the University in their other courses, she is planning a five year sequence leading to the bachelor's degree, the students spending half their time at the University and half with various coöperating agencies. Arrangements have so far been made for students to do their outside work in the University lunch rooms, in health centers, and in hospitals, first as pupil dietitians and in a later year in the chemical laboratory. Already this opening year, 12 nutrition students have enrolled as freshmen. The department is a part of the development of professional courses for women. The others so far started are architecture, commerce, and chemistry.

OKLAHOMA

Health for the Family. A brief outline and bibliography have been prepared by a committee for use in planning a teachers' course in Health for the Family, or in giving

health instruction to children in the public schools by any teacher or person interested in this work. "Health for the Family," may be taught as a separate course or in connection with other home economics courses. This is approved for use in vocational classes and teacher-training institutions, working in coöperation with the State Board for Vocational Education. Those interested may obtain mimeographed copies by writing to Emily Maude Richman, State Supervisor of Home Economics Education, Oklahoma City, Oklahoma.

TEXAS

The Conference of Vocational Home Economics Teachers was held at Houston, November 27–29, 1922. The following talks were given: Methods of Teaching Design, Henrietta C. Porr, University of Texas; Suggestions for Laboratory Work in Design by Vocational Teachers, Isabel Cabiness, Paris, Ethel Barber of Del Rio, Nelle Herblin of Brownwood; The Household Management Course, Jet C. Winters, University of Texas; An Effective Way to Teach House Furnishing, Mrs. Elizabeth McNew Winter, Southwest Texas Normal College; Child Welfare Work, Mary Gearing, Univ. of Texas; A Child Health Program for the Schools, Edythe P. Hershey, Univ. of Texas; Teaching Dietetics on the Project Bases, Gladys Flamson, Belton; The Relationship of Home Projects and Home Practice, Bess Heflin Univ. of Texas; Responsibility of the Home Economics Teacher in the Problem of the School Lunch, Margaret Gleason; How the College can Help you When You are in the Field, Joan Hamilton; Teaching the Foods Lesson, Emma Jensen; Legislation, Jessie Harris; Vocational Education in Del Rio, Maude Williamson; The Short Unit Course, Mabel McBain; The Short Unit Course in Evening School Work, Bernice McDonald; The School out of School Hours, Mr. L. W. Fox; The Challenge of Evening School Work in Home Economics, Lillian Peek.

At a meeting of the Home Economics Section, Mabel McBain, Supervisor of Home Economics, Houston, was elected president, and Florence Spencer of Bryan High School, Dallas, Texas, treasurer. The Section adopted a constitution.

VIRGINIA

An Educational Conference was held in Richmond, Virginia, November 30–December 1, 1922, Mrs. Pearl Powers Moody, Harrisonburg Normal School, presiding. The program was as follows: Educational Tests and Measurements as Applied to Home Economics Education, Miss Bryson and Miss Morgan; What Should a Course in Clothing Include, in Normal Schools, In High Schools? Gertrude Greenawalt, Harrisonburg Normal; Teaching Homemaking in a Cottage, Mary Phillips, Toane High School.

Lula Walker, State Demonstrator, was elected president of the Home Economics Association for next year.

The Home Economics Club under the direction of Grace Brinton, Head of the Department of Home Economics at Harrisonburg Normal has developed into a strong organization. It presents to the public subjects of interest in home economics at its meetings twice a month.

CANADA

Hot Dishes for the School Lunch. Viscount is a small town on the western prairie, with a large consolidated school, the children being brought in vans from the surrounding territory. Nearly a hundred children bring their dinners to school, cold, unappetizing lunches. Since many of these children have to leave home very early in the morning they bolt a hasty breakfast or eat none at all; so the problem of the hot noon lunch was a compelling one from the beginning of the school.

The home economics teachers, Mabel La Roche and Mrs. Murray began their campaign with a Parents' Day. The matter of the hot lunch was discussed from all angles and the parents promised their support.

The plan decided upon is working satisfactorily. Each child brought fifty cents, twenty-five of which went to purchase his cup, saucer, and spoon. The remaining half of the sum was found sufficient to provide the one hot dish at noon every day for two weeks. The next sum asked for, one dollar per capita, paid for lunches for eight weeks. On three days a week, cocoa is served. Tuesday is soup day, and Thursday

is pudding day. The Saskatchewan Department of Education gives thirty dollars to any school where domestic science is taught, and this sum paid for a three burner oil stove. The local school board authorized the purchase of other necessary equipment.

Four girls have charge of preparing and serving the noon lunches for a week, assisted by two boys who act as flunkeys, carrying and emptying water, helping prepare vegetables, and making themselves generally useful in whatever capacity they are needed.

The lunch is served cafeteria fashion and eaten at the individual desks. Afterward the children pass to the back of the room where dishpans of water and towels have been placed, and there in turn each child washes and dries his dishes.

The serving and eating of the lunch and washing of the dishes take half an hour. Fifteen minutes later the girls and flunkeys in charge have finished with the general cleaning and putting away of dishes. There is no confusion. Each child has his place and must keep it. Everything is done with orderly precision.

NOTES

Adelaide S. Baylor has been appointed Chief, Home Economics Education Service, Federal Board for Vocational Education to succeed Anna Richardson.

Gladys Branegan who held the position of State Supervisor in Montana for the past two years resigned to devote her entire time to the work of the residence department at Montana State College.

Mrs. Louise Campbell is Acting Dean of Home Economics, Michigan Agricultural College. Mrs. Campbell is also the head of of the Home Economics Extension Department in Michigan.

Edith Franks, in charge of teacher training at Montana State College has recently assumed the work of State Supervisor of Home Economics for Montana on a part time basis.

Greta Grey, formerly Professor of Home Economics, University of Wyoming, is doing research work in Public Health at Yale University.

Martha Mae Hunter, B.S., University of Kansas, has been added to the Montana Extension Staff as Nutrition Specialist.

Inez LaBossier, B.S., University of Washington, is Clothing Specialist at Montana.

Elsie Leonard, formerly at the University of Wisconsin, is Director of Foods at Smith College, Northampton, Mass.

Anna E. Richardson, formerly Chief of the Division of Home Economics, Federal Board for Vocational Education, is Dean of the School of Home Economics in the State Agricultural College, Ames, Iowa.

Lydia Southard, Whittier Hall, Teachers College, has written a new book "Institution Buying of Household Supplies" to be published by J. B. Lippincott Company.

Dean Marion Talbot, Professor of Household Administration in the University of Chicago, has been elected one of a group of charter Fellows of the American Public Health Association.

Ferne Taylor is now at the University of Wisconsin as superintendent of housekeeping in the dormitory and dining rooms, and is teaching housekeeping and laundry management.

Clara Turner is Instructor in Institution Administration and in charge of residence at Drexel Institute, Philadelphia.

Mary Walton has gone to the University of Michigan to act as house manager for the Martha Cook residence.

Alice Zabriskie is Adviser of Women at Meredith College, Raleigh, N. C.

Courtesy to Dr. Snedden. During the recent Vocational Conference held at Detroit, a few of Dr. Snedden's students had the pleasure of meeting him at breakfast in the Statler Hotel Dining Room. Those present were: Dr. David Snedden, Alice A. Brigham, Frances R. Kelley, Agnes Saunders, Mildred L. Sipp, Myrtle V. Caudell, F. W. Horne, Agnes Lilson, Mabel V. Campbell, Adah Hess, Wylle B. McNeal, Maude Richman, Geraldine Hadley, Jean Cox.